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RESEARCHES,

Concerning

THE INSTITUTIONS & MONUMENTS

OF

the Ancient Inhabitants

OF

AMERICA,

with Descriptions & Views

OF SOME OF THE MOST

Striking Scenes

in the

CORDILLERAS!

Written in French by

ALEXANDER DE HUMBOLDT,

& Translated into English by

Helen Maria Williams.

Vol. I.

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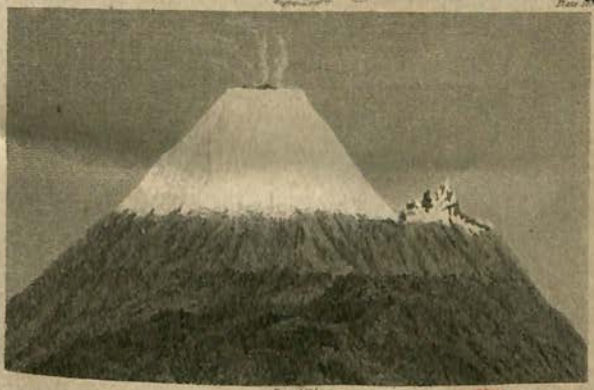

VIEW OF COTOPAXI.

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OF THE

EDITOR.

THE Views of the Cordilleras and Monuments of the Natives of America, which form the Picturesque Atlas of the Quarto Edition of M. M. de Humboldt and Bonpland's Travels in the Equinoxial Regions of the New Continent, consist of one large Volume in Folio, ornamented with Sixty-nine Plates engraved by the first Artists of Berlin, Rome, and Paris. This Work, which is highly interesting, from the numerous Researches it contains in the Antiquities of Mexico and Peru, from the Description of the most remarkable Scenes of the Cordilleras, and the Manners of its Inhabitants, should accompany the Octavo Edition of this Voyage; but the Picturesque Atlas in Folio being, from its Nature, of too high a Price for

Readers in general, it has been judged necessary to Reprint the Text in two Octavo Volumes. The greater Part of the Subjects contained in the Atlas may be read without consulting the Plates, but some Parts of the Text to be well understood, require the Aid of the Plates. For this Reason, Nineteen Engravings have been selected by M. de Humboldt, from Sixty-nine contained in the Folio Edition, which Plates are reduced in order to be placed at the End of the Two Octavo Volumes.

The Geographical and Physical Maps will accompany the Personal Narrative.

PICTURESQUE ATLAS

OF

TRAVELS

TO THE

EQUINOCTIAL REGIONS

OF

THE NEW CONTINENT.

INTRODUCTION.

I HAVE collected, in the following work, whatever relates to the origin and first progress of the arts among the natives of America. Two thirds of the plates which it contains present specimens of the remains of their architecture, sculpture, historical paintings, and hieroglyphics relative to their division of time, and the system of their calendar. To this representation of

their monuments, which are interesting to the philosophical study of man, I have added a few of the most remarkable picturesque views of the new continent. The motives for this selection will be found in the general observations at the beginning of this Essay.

The description of each plate, as far as the nature of the subject admits, forms a separate treatise. I have dwelt more at length on such as could throw light on the analogies existing between the inhabitants of the two hemispheres; and we shall be surprised to find, towards the end of the fifteenth century, in a world which we call new, those ancient institutions, those religious notions, and that style of building, which seem in Asia to indicate the very dawn of civilization. The characteristic features of nations, like the internal construction of plants, spread over the surface of the globe, were the impression of a primitive type, notwithstanding the variety produced by the difference of climates, the

nature of the soil, and the concurrence of many accidental causes.

In the beginning of the conquest of America, the attention of Europe was chiefly directed toward the gigantic constructions of Couzco, the high roads carried along the centre of the Cordilleras, the pyramids with steps, and the worship and symbolical writings of the Mexicans. The country around Port Jackson, in New Holland, and the island of Otaheite, have not been more frequently described in our times, than were the regions of Mexico and Peru at that period. To form a proper estimate of the simplicity, the true and local colouring which characterizes the descriptions of the first Spanish writers, we must have visited the spot. While we peruse their writings, we regret that they are not accompanied with drawings, to have given us a precise idea of the numerous monuments which became the prey of fanaticism, or which have been suffered to fall into ruin from negligence not less culpable.

The ardour, with which America had been the object of investigation, diminished from the beginning of the seventeenth century. The Spanish colonies, which were the only regions formerly inhabited by civilized nations, were shut against foreigners; and recently, when the Abbé Clavigero published in Italy his ancient history of Mexico, the facts, attested by a crowd of occular witnesses, often hostile to each other, were regarded as extremely doubtful. Some distinguished writers, more struck with the contrasts than the harmony of nature, have described the whole of America as a marshy country, unfavourable to the increase of animals, and newly inhabited by hordes as savage as the people of the South Sea. In the historical researches respecting the Americans, candid examination had given place to absolute scepticism. The declamatory descriptions of Solis, and of some other writers, who had never quitted Europe, were confounded with the simple but true nar-

ratives of the first travellers; and it seemed to be the duty of a philosopher, to refuse assent to every observation made by the missionaries.

Since the end of the last century, a happy revolution has taken place in the manner of examining the civilization of nations, and the causes which impede or favour its progress. We have become acquainted with countries, the customs, institutions, and arts of which differ almost as widely from those of the Greeks and Romans, as the primitive forms of extinct races of animals differ from those of the species, which are the objects of descriptive natural history. The society at Calcutta has thrown a luminous ray over the history of the people of Asia. The monuments of Egypt, which are at present delineated with singular precision, have been compared with the monuments of countries the most remote; and my own recent investigations on the natives of America appear at an epocha, in which we no longer deem unworthy of

attention whatever is not conformable to that style, of which the Greeks have left such inimitable models.

It might have been preferable to have arranged the materials, contained in this work, in geographical order; but the difficulty of collecting, and terminating at the same time, a great number of plates engraved in Italy, Germany, and France, has prevented me from following this method. The want of order, compensated, to a certain degree, by the advantage of variety, is also less reprehensible in the descriptions of a Picturesque Atlas, than in a regular Treatise; and I shall endeavour to remedy this inconvenience by a table, in which the plates are classed agreeably to the nature of the objects they represent.

I. MONUMENTS.

A. *Mexican.*

Statue of a priestess.
Pyramid of Cholula.
Fort of Xochicalco.

Bas-relief, representing the triumph of a warrior.
Calendar and hieroglyphics of the days.
Vases.
Bas-relief sculptured around a cylindrical stone.
Axe with engraved characters.
Sepulchral house of Mitla.
Hieroglyphical paintings.

Manuscripts of the Vatican.
of Veletri.
of Vienna.
of Dresden.
of Berlin.
of Paris.
of Mendoza.
of Gemelli.

B. *Peruvian.*

House of the Inca at Cannar.
Inga-Chungana.
Ruins of Callo.
Inti-Guaicu.

C. *Muyscas.*

Calendar.
Sculptured heads.

II. Views.

A. *Elevated plain of Mexico.*

Great square of Mexico.
Basaltes of Regla.
Coffer of Perote.
Volcano of Jorullo.
Porphyry columns of Jacal.
Organos of Actopan.

C. *Mountains of South America.*

Silla de Caraccas.
Air Volcanoes of Turbaco.
Cataract of Tequendama.
Lake of Guatavita.
Natural bridge of Icononzo.
Passage of Quindiu.
Cataract of Vinegar river.
Chimborazo.
Volcano of Cotopaxi.
Pyramidal summits of Ilinissa.
Nevado of Corazon.
Nevado of Cayambe.
Volcano of Pichincha.
Rope bridge of Penipe.
Letter-carrier of Jaen Bracamaros.
Raft of Guayaquil.

I have endeavoured to copy, with the greatest exactness, the objects exhibited in these engravings. Those who are employed in the practical profession of the arts are aware, how difficult it is to attend minutely to the great number of plates, which compose a Picturesque Atlas. If some be less perfect than connoisseurs might wish, this imperfection ought not to be attributed to the artists employed, under my inspection, in the execution of my work, but to the sketches which I drew on the spot, and often in very difficult circumstances. Several landscapes have been coloured, because in this sort of engraving, the snow detaches itself more strikingly from the azure of the sky, and the imitation of the Mexican paintings rendered the mixture of coloured plates with engravings indispensable. I have felt how difficult it is to give the former that vigorous tone of colouring, which we admire in the Oriental Scenery of Mr. Daniel.

In the description of the monuments of

America, I have attempted to keep an equal tenor between the two methods followed by those learned men, who have investigated the monuments, the languages, and the traditions of nations. Some, allured by splendid hypotheses, built on very unstable foundations, have drawn general consequences from a small number of solitary facts: they have discovered Chinese and Egyptian colonies in America; recognized Celtic dialects and the Phenician alphabet; and, while we are ignorant whether the Osci, the Goths, or the Celts, are nations emigrated from Asia, have given a decisive opinion on the origin of all the hordes of the New Continent. Others have accumulated materials without generalizing any idea; which is a method, as sterile in tracing the history of a nation, as in delineating the different branches of natural philosophy. May I have been happy enough to avoid the errors, which I have now pointed out! A small number of nations, far distant from each other, the

Etruscans, the Egyptians, the people of Thibet, and the Aztecks, exhibit striking analogies in their buildings, their religious institutions, their division of time, their cycles of regeneration, and their mystic notions. It is the duty of the historian to point out these analogies, which are as difficult to explain as the relations that exist between the Sanscrit, the Persian, the Greek, and the languages of German origin; but in attempting to generalize ideas, we should learn to stop at the point where precise data are wanting. In conformity to these principles, I shall mention the consequences to which the opinions I have adopted seem to lead respecting the natives of the New World.

Neither an attentive examination of the geological constitution of America, nor reflections on the equilibrium of the fluids, that are diffused over the surface of the Globe, lead us to admit, that the New Continent emerged from the waters at a later period than the Old: we discern in the former the same succession of stony strata, that we find

in our own hemisphere; and it is probable, that, in the mountains of Peru, the granites, the micaceous schists, or the different formations of gypsum, and gritstone, existed originally at the same periods as the rocks of the same denominations in the Alps of Switzerland. The whole globe appears to have undergone the same catastrophes. At a height superior to that of Mount Blanc, on the summit of the Andes, we find petrified sea-shells; fossil bones of elephants are spread over the equinoctial regions; and what is very remarkable, they are not discovered at the feet of the palm trees in the burning plains of the Orinoco, but on the coldest and most elevated regions of the Cordilleras. In the New World, as well as in the Old, generations of species long extinct have preceded those, which now people the earth, the waters, and the air.

There is no proof, that the existence of man is much more recent in America than in the other continent. Within the tropics, the strength of vegetation, the breadth of

rivers, and partial inundations have presented powerful obstacles to the migration of nations. The extensive countries of the north of Asia are as thinly peopled, as the savannahs of New Mexico and Paraguay; nor is it necessary to suppose, that the countries first peopled are those, which offer the greatest mass of inhabitants. The problem of the first population of America is no more the province of history, than the questions on the origin of plants and animals, and on the distribution of organic germs, are that of natural science. History, in carrying us back to the earliest epochas, instructs us that almost every part of the Globe is occupied by men who think themselves aborigines, because they are ignorant of their origin. Among a multitude of nations, who have succeeded, or have been incorporated with each other, it is impossible to discover with precision the first basis of population, that primitive stratum beyond which the region of cosmogonical tradition begins.

The nations of America, except those which border on the polar circle, form a single race, characterized by the formation of the scull, the colour of the skin, the extreme thinness of the beard, and straight and glossy hair. The American race bears a very striking resemblance to that of the Mongul nations, which include the descendants of the Hiong-Nu, known heretofore by the name of Huns, the Kalkas, the Kalmucks, and the Burats. It has been ascertained by late observations, that not only the inhabitants of Unalashka, but several tribes of South America, indicate, by the osteological characters of the head, a passage from the American to the Mongul race. When we shall have more completely studied the brown men of Africa, and that swarm of nations, who inhabit the interior and north-east of Asia, and who are vaguely described by systematic travellers under the name of Tartars and Tschoudes, the Caucasian, Mongul, American, Malay, and Negro races, will

appear less insulated, and we shall acknowledge, in this great family of the human race, one single organic type, modified by circumstances which perhaps will ever remain unknown.

Though the nations of the New Continent are connected by intimate ties, they exhibit, in the mobility of their features, in their complexions, tanned in a greater or less degree, and in their stature, a difference as remarkable as the Arabians, the Persians, and Sclavonians, who are all of the Caucasian race. The hordes who wander along the burning plains of the equinoctial regions have, however, no darker skins than the mountaineers of the temperate zone; whether it be that in the human race, and in the greater part of animals, there is a certain period of organic life, beyond which the influence of climate and food have no effect, or that the deviation from the primitive type becomes apparent only after a long series of ages. Besides, every thing concurs to prove, that

the Americans, as well as the people of the Mongul race, have less flexibility of organization than the other nations of Asia and Europe.

The American race, though the least numerous of any, occupies the largest space on the Globe. It extends across both hemispheres, from sixty-eight degrees of northern, and fifty-five degrees of southern latitude. It is the only race, which has fixed its dwelling on the burning plains bounded by the ocean, as well as on the ridges of the mountains, where it roams over heights twelve hundred feet above that of the Peak of Teneriffe.

The number of languages, which distinguish the different native tribes, appears still more considerable in the New Continent than in Africa, where, according to the late researches of Messrs. Seetzen and Vater, there are above one hundred and forty. In this respect the whole of America resembles Caucasus, Italy before the conquest of the Romans, Asia Minor when

that country contained, on a small extent of territory, the Cilicians of Semitic race, the Phrygians of Thracian origin, the Lydians, and the Celts. The configuration of the soil, the strength of vegetation, the apprehensions of the mountaineers under the tropics of exposing themselves to the burning heat of the plains, are obstacles to communication, and contribute to the amazing variety of American dialects. This variety, it is observed, is more restrained in the savannahs and forests of the north, which are easily traversed by the hunter, on the banks of great rivers along the coast of the ocean, and in every country where the Incas had established their theocracy by the force of arms.

When it is asserted, that several hundred languages are found in a continent, the whole population of which is not equal to that of France, we regard as different those languages, which bear the same affinity to each other, I will not say as the German and the Dutch, or the Italian and the Spanish,

but as the Danish and the German, the Chaldean and the Arabic, the Greek and the Latin. In proportion as we penetrate into the labyrinth of American idioms, we discover, that several are susceptible of being classed by families, while a still greater number remain insulated, like the Biscayan among European, and the Japanese among Asiatic languages. This separation may, however, be only apparent; for we may presume that the languages, which seem to admit of no ethnographical classification, have some affinity, either with other languages which have been for a long time extinct, or with the idioms of nations which have never yet been visited by travellers.

The greater part of the American languages, even such as have the same difference with each other as the languages of Germannic origin, the Celtic and the Sclavonian, bear a certain analogy in the whole of their organization: for instance, in the complication of grammatical forms, in the modification of the verb according to the

nature of its syntax, and in the number of additive particles (affixa et suffixa). This uniform tendency of the idioms betrays, if not a community of origin, at least a great analogy in the intellectual dispositions of the American tribes, from Greenland to the Magellanic regions.

Investigations made with the most scrupulous exactness, in following a method which had not hitherto been used in the study of etymologies, have proved, that there are a few words that are common in the vocabularies of the two continents. In eighty-three American languages, examined by Messrs. Barton and Vater, one hundred and seventy words have been found, the roots of which appear to be the same; and it is easy to perceive, that this analogy is not accidental, since it does not rest merely on imitative harmony, or on that conformity in the organs, which produces almost a perfect identity in the first sounds articulated by children. Of these one hundred and seventy words, which have this con-

nexion with each other, three fifths resemble the Mantchou, the Tongouse, the Mongul, and the Samoyede; and two fifths the Celtic and Tschoud, the Biscayan, the Coptic, and the Congo languages. These words have been found by comparing the whole of the American languages with the whole of those of the Old World; for hitherto we are acquainted with no American idiom, which seems to have an exclusive correspondence with any of the Asiatic, African, or European tongues. What some learned writers have asserted from abstract theories, respecting the pretended poverty of all the American languages, and the extreme imperfection of their numerical system, is as doubtful as the assertions which have been made respecting the weakness and stupidity of the human race throughout the New Continent, the stunted growth of animated nature, and the degeneration of those animals, which have been transported from one hemisphere to the other.

Several idioms, which now form the lan-

guage of barbarous nations only, seem to be the wrecks of languages, once rich, flexible, and belonging to a more cultivated state. We shall not enter into the discussion, whether the primitive condition of the human race was rude and brutalized, or whether the savage hordes are descended from nations, whose intellectual faculties, and the languages which reflect those faculties, were equally developed; we shall only observe, that the little which we know of the history of the Americans tends to prove, that the tribes, whose migrations have been directed from the north to the south, while yet dwelling near the polar regions, used various idioms which we find at present under the torrid zone. From this we may by analogy conclude, that the ramification, or rather, to use a term independent of every system, the multiplicity of languages is a very ancient phenomenon. Perhaps those, which we call American, belong no more to America than the

Magyar or Hungarian, the Tschoud or Finlandish belongs to Europe.

We must admit, that the comparison between the idioms of the two continents has hitherto led to no important conclusion; but we may cherish the hope, that this study will become more productive, when a greater number of materials shall be found, to exercise the sagacity of the learned. How many languages exist in America, and in central and eastern Asia, the mechanism of which is to us as much unknown as that of the Tyrhenian, the Oscan, and the Sabine! Among the nations who have disappeared in the Old World, there are perhaps several, of which a few scanty tribes are preserved in the vast solitudes of America.

If languages supply but feeble evidence of ancient communication between the two worlds, this communication is fully proved by the cosmogonies, the monuments, the hieroglyphics, and institutions

of the people of America and Asia. I flatter myself, that the following sheets will justify this assertion, by the addition of new evidence to that which has been long since admitted. I have carefully endeavoured to make a proper distinction between whatever indicates a community of origin, with what is the result of the analogous situation of nations, when they begin to improve their social state.

It has hitherto been impossible to ascertain the period, when the communication between the inhabitants of the two worlds took place; and how rash would be the attempt to point out the group of nations of the Old Continent, with which the Toltecks, the Aztecks, the Muyscas, and the Peruvians present the nearest analogies; since these analogies are apparent in the traditions, the monuments, and customs, which perhaps preceded the present division of Asiatics into Chinese, Moguls, Hindoos, and Tungooses.

At the period of the discovery of the

New World, or rather when the first invasion of the Spaniards took place, the Americans, who had made the greatest progress in civilization, were the inhabitants of the mountains. Men, born in the plains under temperate climates, had followed the ridges of the Cordilleras, which rise in proportion as they approach the Equator. In these elevated regions they found the temperature and the plants, which were congenial with those of their native soil.

The faculties unfold themselves with more facility, wherever man, chained to a barren soil, compelled to struggle with the parsimony of nature, rises victorious from the lengthened contest. The arid mountains of Caucasus and central Asia are the refuges of free and barbarous nations. In the equinoxial parts of America, where savannahs, clothed in perpetual verdure, are suspended above the region of the clouds, no civilized nations exist but those embosomed in the Cordilleras. Their first

progress in the arts was as ancient as the singular form of their governments, which were unfavourable to individual liberty.

The New Continent, like that of Africa and Asia, presents several points of a primitive civilization, of which the mutual relations are as unknown as those of Meroe, Thibet, and China. The civilization of Mexico emanated from a country situate towards the north; in South America, the great edifices of Tiahuanaco have served as models for the monuments which the Incas erected at Couzco. Amidst the extensive plains of Upper Canada, in Florida, and in the deserts bordered by the Orinoco, the Cassiquiare, and the Guainia, dykes of a considerable length, weapons of brass, and sculptured stones, are indications that those very countries were formerly inhabited by industrious nations, which are now traversed only by tribes of savage hunters.

The unequal distribution of animals over the surface of the globe has had a considerable influence on the fate of nations, and

on their greater or less rapid progress toward civilization. In the Old Continent, the pastoral life formed the passage from hunting to agricultural nations. The ruminating animals, so easily reared under every climate, have followed the African negro, the Mogul, the Malay, and the hordes that dwell on Caucasus. Though several quadrupeds, and a greater number of the vegetable tribe, are common to the most northern regions of both worlds, America possesses, in the species of oxen, only the bison and the musk ox; two animals difficult to tame, and the females of which yield but little milk, notwithstanding the richness of the pasture. The American hunter was not led to agriculture by the care of flocks, and the habits of a pastoral life. The inhabitant of the Andes was never tempted to milk the lama, the alpaca, or the guanaco. Milk was formerly a nourishment unknown to the Americans, as well as to several nations of eastern Asia.

Never has the savage, freely roving through the forests of the temperate zone, been known to throw willingly aside the habits of the hunter, and embrace the stillness of agricultural life. This transition, which is the most difficult, and the most important in the history of human societies, can only be attained by the force of circumstances. When, in their distant migrations, hordes of hunters, expelled by other warlike hordes, reached the plains of the equinoctial zone, they were compelled by impenetrable forests and a luxuriant vegetation, to change their character and habits. There are countries between the Orinoco, the Ucajale, and the river of Amazons, where man finds no other space free than the rivers and the lakes. Rivetted to the soil on the banks of rivers, the most savage tribes encircle their huts with bananas, jatropha, and other alimentary plants.

No historical fact, no tradition connects the nations of South America with those

that inhabit the north of the Isthmus of Panama. The annals of the Mexican empire appear to go as far back as the sixth century of our era, since at that period we find the epochas of the migrations, the causes which produced them, the names of the chiefs descended from the illustrious house of Citin, who led, from the unknown regions of Aztlan and Teocolhuacan, the northern nations into the plains of Anahuac. The foundation of Tenochtillan, like that of Rome, goes back to the heroic ages; and it is only from the twelfth century that the annals of the Aztecks, like those of the Chinese, and the people of Thibet, give an uninterrupted account of secular festivals, the genealogy of their kings, the tributes imposed on the conquered, the foundation of cities, celestial phenomena, the minutest events even which have influenced the state of societies in their infancy.

Though no traditions point out any direct connexion between the nations of

North and South America, their history is not less fraught with analogies in the political and religious revolutions, from which dates the civilization of the Aztecks, the Muyscas, and the Peruvians. Men with beards, and with clearer complexions than the natives of Anahuac, Cundinamarca, and the elevated plain of Couzco, make their appearance without any indication of the place of their birth; and, bearing the title of high-priests, of legislators, of the friends of peace, and the arts, which flourish under its auspices, operate a sudden change in the policy of the nations, who hail their arrival with veneration. Quetzalcoatl, Bochica, and Manco Capac, are the sacred names of these mysterious beings. Quetzalcoatl, clothed in a black, sacerdotal robe, comes from Panuco, from the shores of the Gulf of Mexico; Bochica, the Boudha of the Muyscas, presents himself on the high plains of Bogota, where he arrives from the savannahs, which stretch along the east of the Cordilleras. The

history of these legislators, which I have endeavoured to unfold in this work, is intermixed with miracles, religious fictions, and with those characters which imply an allegorical meaning. Some learned men have pretended to discover, that these strangers were shipwrecked Europeans, or the descendants of those Scandinavians, who, in the eleventh century, visited Greenland, Newfoundland, and perhaps Nova Scotia; but a slight reflection on the period of the Tolteck migrations, on the monastic institutions, the symbols of worship, the calendar, and the form of the monuments of Cholula, of Sogamozo, and of Couzco, leads us to conclude, that it was not in the north of Europe that Quetzalcoatl, Bochica, and Manco Capac framed their code of laws. Every consideration leads us rather towards Eastern Asia, to those nations who have been in contact with the inhabitants of Thibet, to the Shamanist Tartars, and the bearded Ainos of the isles of Jesso and Sachalin.

When I have employed in the course of these investigations, the words, monuments of the New World, progress in the arts of drawing, intellectual culture, I have had no intention of supposing a state of things, which indicates what is called, somewhat vaguely, a highly advanced civilization. Nothing is more difficult than a comparison between nations, who have followed different roads in their progress towards social perfection. The Mexicans and Peruvians must not be judged according to the principles laid down in the history of those nations, which are the unceasing objects of our studies. They are as remote from the Greeks and the Romans, as they bear a near affinity to the Etruscans and the people of Thibet. Among the Peruvians, a theocratic government, while it favoured the growth of industry, the construction of public works, and whatever might be called general civilization, presented obstacles to the display of the faculties of the individual. Among the Greeks,

on the contrary, before the time of Pericles, this liberal and rapid progress of individual talents outstripped the tardy steps of general civilization. The empire of the Incas may be compared to some great monastic establishment, in which each member of the congregation was prescribed the duties he had to perform for the general good. When on the spot we study those Peruvians, who, through the lapse of ages, have preserved their national physiognomy, we learn to estimate, at its true value, the code of laws framed by Manco Capac, and the effects produced on morals and public happiness. We discern a general state of prosperity, contrasted with a small portion of private welfare; more submissive resignation to the decrees of the sovereign, than patriotic love for the country; passive obedience, without courage for bold enterprises; a spirit of order, which regulated with minute precision the most indifferent actions, while no general views enlarged the mind, and no elevation of thought ennobled the charac-

ter. The most complicated political institutions recorded in the history of mankind had crushed the germe of personal liberty, and the founder of the empire of Couzco, in flattering himself with the power of forcing men to be happy, reduced them to the state of mere machines. The Peruvian theocracy was, no doubt, less oppressive than the government of the Mexican kings; yet both contributed to give the monuments, the rites, and the mythology of the two nations, that dark and melancholy aspect, which forms a striking contrast with the elegant arts and soothing fictions of the people of Greece.

Paris, April the 12*th*, 1813.

Monuments of America,

AND

PICTURESQUE VIEWS

OF THE

CORDILLERAS.

THE monuments of nations, from which we are separated by a long interval of ages, are calculated to fix our attention in two distinct points of view. The works of art, belonging to a people highly advanced in civilization, excite our admiration by the harmony and beauty of their forms, and by the genius with which they are conceived. The bust of Alexander, found in the garden of the Pisoes, would be esteemed a valuable relic of antiquity, although no inscription indicated the features of the conqueror of Arbela. An engraved stone, or a medal of the

polished ages of Greece, interests the lovers of the arts by the severity of the style, or by its finished execution, although no legend or monogram connects these objects with any particular point of history. Such is the privilege of the marvels of genius, which were produced in the climes of Asia Minor, and in part of the south of Europe.

The monuments of those nations, on the contrary, which have attained no high degree of intellectual cultivation, which either from religious or political causes, or the nature of their organization, have never been affected by the beauty of forms, can be considered only as memorials of history. To this class belong the remains of sculpture, scattered over the vast countries which extend from the banks of the Euphrates to the eastern shores of Asia. The idols of Thibet and Hindostan, those which have been discovered on the central plains of Mongolia, are calculated to throw light on the ancient communication of nations with each other, and on the common origin of their mythological traditions.

The rudest works, the most grotesque forms, those masses of sculptured rocks, venerable only from their enormous magnitude, and their remote antiquity; those lofty pyramids, which indicate the multitudes employed in their construc-

tion; are all connected with the philosophical study of history. By the same connection, the feeble remains of the skill, or rather industry, of the nations of the New Continent become worthy of our attention. Influenced by this persuasion, I have, in the course of my travels, brought together whatever objects I have been able, by unwearied research, to discover in the countries, where intolerance in those ages of barbarism left scarcely any vestige of the manners and religious rites of their ancient inhabitants; when edifices and temples were demolished for the stones with which they were erected, or the hidden treasures they were supposed to contain.

The comparative view which I shall take of the works of art belonging to Peru and Mexico, and those of the ancient world, will give some interest to my researches, as well as to the Picturesque Atlas, which will contain the result of my investigations. Biassed by no system, I shall point out those analogies that naturally present themselves, distinguishing such as seem to prove an identity of race, from such as perhaps depend only on internal causes, on the resemblance of all nations in the display of their intellectual faculties. I shall here confine myself to a succinct description of the objects represented in the engravings. The consequences which seem to result from the comparative view of these mo-

numents can be discussed only in the narrative of my journey; since, as the nations to whom these edifices and sculptures are attributed still exist, their character, and the knowledge of their manners, will throw light on the history of their migrations.

Investigations of monuments erected by half-civilized nations have another kind of interest, which we may call psychological; presenting to us a picture of the uniform progress of the human mind. The works of the first inhabitants of Mexico hold an intermediary place between those of the Scythian tribes, and the ancient monuments of Hindostan. What a striking spectacle does human genius present, when we survey the immense disparity, that separates the tombs of Tinian and the statues of Easter Island from the monuments of the Mexican temple of Mitla; and compare the shapeless idols of this temple with the masterpieces of the chisel of Praxiteles or Lysippus!

But we shall cease to wonder at the rude style or incorrect expression of the monuments of the nations of America, when we reflect, that, cut off from the rest of mankind, wanderers in a country where man must have long struggled against Nature in her most savage and disordered aspect, these tribes, with no resources but in their own energy, could only emerge with tardy

progress from their native barbarism. The east of Asia, the west and the north of Europe, present the same phenomena. In pointing them out, I shall not pretend to investigate from what hidden causes the germe of the fine arts grew and spread only over a very small part of the Globe. How many nations of the ancient world lived in a climate equal with that of Greece, and surrounded with every object that elevates the imagination, without awakening to that sensibility of the perfection of forms, the peculiar privilege of the Greeks, to whose creative genius belong all that the arts possess of beautiful and sublime!

These considerations are sufficient to explain my intentions in the publication of these fragments of American monuments. Their study may become useful, like that of the most imperfect languages; which are interesting, not only by their analogy with those that are known, but still more by the strict connection, which exists between their structure and the degree of intelligence in man, when more or less remote from civilization.

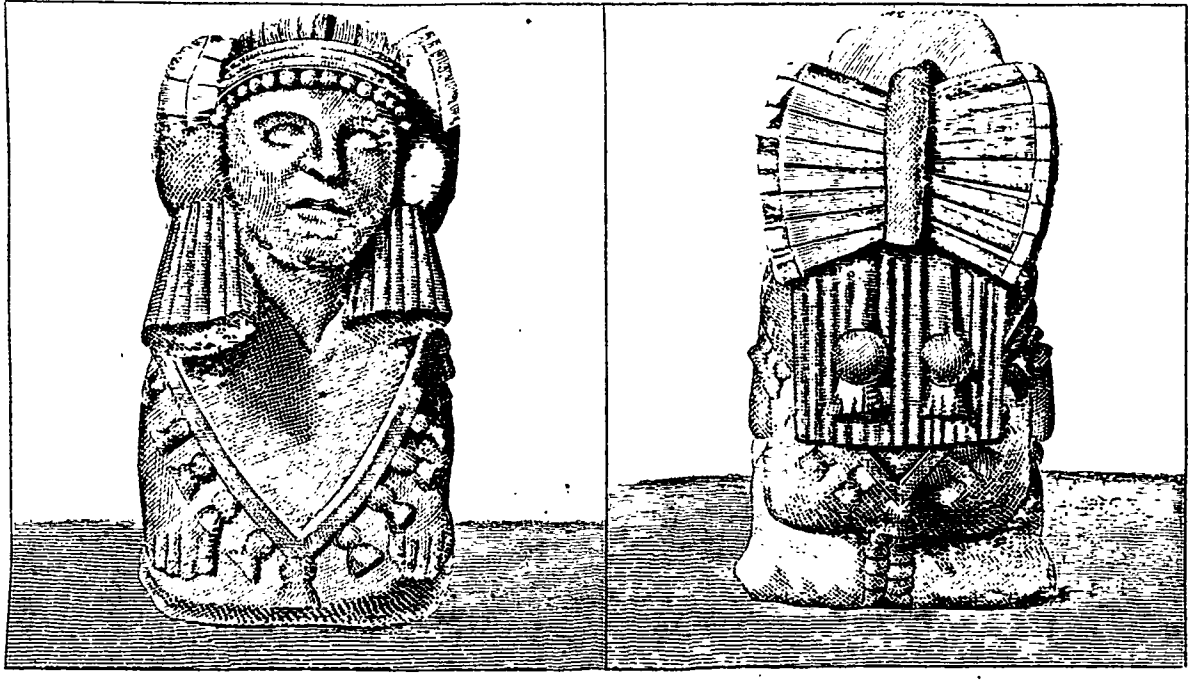
Presenting in the same work the rude monuments of the indigenous tribes of America, and the picturesque views of the mountainous countries which they inhabited, my intention is to

connect objects, the relation of which to each other has not escaped the sagacity of those, who apply themselves to the philosophical study of the human mind. Although the manners of a people, the display of their intellectual faculties, the peculiar character stamped on their works, depend on a great number of causes which are not merely local, it is nevertheless true, that the climate, the nature of the soil, the physiognomy of the plants, the view of beautiful or of savage nature, have great influence on the progress of the arts, and on the style which distinguishes their productions. This influence becomes the more perceptible, the farther man is removed from civilization. What a contrast between the architecture of a tribe that has dwelt in vast and gloomy caverns, and that of hordes whose bold monuments recall in the shafts of their columns the towering trunks of the palm trees of the desert! An accurate knowledge of the origin of the arts can be acquired only from studying the nature of the site where they arose. The only American tribes, among whom we find remarkable monuments, are the inhabitants of mountains. Isolated in the region of the clouds, on the most elevated plains of the Globe, surrounded by volcanoes, the craters of which are encircled by eternal snows, they appear to have

admired, in the solitude of their deserts, those objects only which strike the imagination by the greatness of their masses; and their productions bear the stamp of the savage nature of the Cordilleras.

A part of this Atlas is appropriated to sketches of the great scenes of this savage nature. I have been less studious to delineate those, which produce only a picturesque effect, than to give an exact representation of the shapes of the mountains, the vallies by which their sides are furrowed, and the tremendous cascades formed by the fall of their torrents. The Andes bear the same proportion to the chain of the Alps, as these to the chain of the Pyrenees. Whatever I have beheld of picturesque or awful on the borders of the Saverne, in the north of Germany, on the Euganean mountains, the central chain of Europe, or the rapid declivity of the peak of Teneriffe, I have found all assembled in the Cordilleras of the New World. It would require ages to observe these beauties, and discover the wonders which nature has lavished over an extent of two thousand five hundred leagues, from the granitic mountains of the Strait of Magellan to the coasts bordering on the east of Asia. I shall think I have accomplished my purpose, if the feeble sketches con-

tained in this work should lead other travellers, friends of the arts, to visit the regions which I traversed, and to retrace accurately those stupendous scenes, to which the Old Continent offers no resemblance.



Statue of an Aztec Priestess.

Pub.d by Longman, Hurst, Rees Orme, & Brown, Aug.t 1814.

STATUE

OF

AN AZTECK PRIESTESS.

PLATES I. AND II.

I HAVE placed at the head of my Picturesque Atlas a valuable relick of Mexican sculpture; a statue in basalt, preserved at Mexico in the cabinet of a distinguished lover of the arts, M. Dupé, captain in the service of his catholic majesty. This well-informed officer, who in early life improved his taste for the fine arts by a residence in Italy, has made several excursions through New Spain, to investigate the Mexican monuments. He has sketched with great accuracy the reliefs of the pyramid of Papantla, on which he intended to publish a very curious work.

The statue, of which both sides are here represented in their natural size *, is chiefly re-

* See the French edition in folio, Plates I and II.

markable for a kind of headdress, somewhat resembling the veil or calantica of the heads of Isis, the Sphinxes, Antinoüs, and a great number of other Egyptian statues. It must nevertheless be observed, that, in the Egyptian veil, the two ends, which fall below the ears, are generally very scanty and cross folded. In several statues of the God Apis, in the Museum of the Capitol, the ends are convex in the front, and plaited lengthways, while the back part, that which touches the neck, is constantly flat, and not rounded as in the Mexican headdress. That the greatest analogy exists between this headdress and the plaited drapery, that encircles the heads incrusted on the pillars of Tentyra, is evident from the accurate drawings, which M. Denon has given in his Travels in Egypt.

Perhaps the fluted pads, which in the Mexican statue extend towards the shoulders, are masses of hair, like the tresses in a statue of Isis, of Greek workmanship, placed in the library of the Villa Ludovisi at Rome. This singular arrangement of the hair is particularly striking on the reverse of the statue, engraved on the second plate, which presents an enormous bag tied in the middle by a knot. The celebrated Zoega, of whom the fine arts have lately been deprived by death, assured me, that he had seen a bag of exactly the same form on a small statue of Osiris in bronze, in the Museum of Cardinal Borgia,

at Veletri. The forehead of the Mexican priestess is ornamented with a string of pearls on the edge of a narrow fillet. These pearls, which have never been observed on any Egyptian statue, indicate the communications which existed between the city of Tenochtitlan, ancient Mexico, and the coast of California, where pearls are fished up in great numbers. The neck is covered with a three cornered handkerchief, to which hang twenty-two little balls, or tassels, placed with great symmetry. These tassels, as well as the headdress, are found on a great number of Mexican statues, on bas-reliefs, and in hieroglyphical paintings, and remind us of the small apples and pomegranates on the robes of the high priest of the Hebrews.

On the front of the statue, and half a decimetre * from its basis, the toes of the feet are seen on each side, but there are no hands, which indicates the infancy of the art. It seems, from the back front, that the figure is seated, or rather squat; and it is singular, that the eyes in this figure are without eye-balls, which are indicated in the bas-reliefs lately discovered at Oaxaca. The basalt of this sculpture is very hard, and of a fine black; it is the true basalt, with a few grains of peridot, and not Lydian

* For the correspondence of English with French measures, see the table at the end of the volume.

stone, or porphyry with basis of greenstone, which antiquaries commonly call Egyptian basalt. The folds of the headdress, and especially the pearls, are highly finished; though the artist, destitute of a steel chisel, and with no tools perhaps but those of copper mixed with tin, such as I have brought from Peru, must have encountered great difficulties in the execution.

This statue has been very accurately drawn, under the inspection of M. Dupé, by a student of the Academy of Painting at Mexico. It is 0·88 of a metre in height, and 0·19 in breadth. I have adopted the denomination of the statue of a priestess, the title which it bears in the country. It may nevertheless represent some Mexican divinity, and have been originally classed among the household gods. The headdress and pearls found on an idol discovered in the ruins of Tezcuco, and which I deposited in the cabinet of the King of Prussia, at Berlin, give authority to this conjecture. The ornament of the neck, and the natural form of the head, render it more probable, that the statue represents simply an Azteck woman. On this last supposition, the fluted pads, which extend toward the breast, cannot be tresses; since the virgins, who devoted themselves to the service of the temple, were shorn by the high priest, or tepanteohuatzin.

A slight resemblance between the calantica of the heads of Isis, and the Mexican headdress; the pyramids with terrasses, like those of Fayoum, and of Sakharah; the frequent use of hieroglyphical painting; the five complementary days added to the end of the Mexican year, similar to the epagomena of the Memphian year; exhibit very remarkable points of comparison between the people of the Old and the New Continent. We are nevertheless very far from indulging in hypotheses, which would be as vague and uncertain as those which make the Chinese a colony from Egypt, and the Biscayan language a dialect of the Hebrew. These analogies for the most part disappear, when the facts are examined separately. The Mexican year, for instance, notwithstanding the epagomena, differs entirely from that of the Egyptians. An illustrious geometrician *, who examined the fragments which I brought to Europe, found by the Mexican intercalation, that the duration of the tropical year of the Aztecks is almost identical with the duration found by the astronomers of Almamon.

If we go back to the early ages, history marks several central points of civilization, of the mutual relations of which we are ignorant; such

* La Place, Exposition du Systéme du Monde, 3e éd. p. 554.

as Meroe, Egypt, the banks of the Euphrates, Hindostan, and China. The elevated plains of Central Asia have no doubt given birth to systems of knowledge still more remote, and perhaps to the reflection of that light we may be led to attribute the commencement of American civilization.

VIEW

OF THE

GREAT SQUARE OF MEXICO.

PLATE III.

THE city of Tenochtitlan, the capital of Anahuac, founded in the year 1325, on a small group of islands, situate on the western part of the salt lake of Tezcuco, was totally destroyed during the siege carried on by the Spaniards in 1521, which lasted seventy-five days. The new city, which contains nearly 140,000 inhabitants, was rebuilt by Cortez on the ruins of the old; The streets were ranged in the same lines, but the canals, which crossed the streets, were filled up by degrees; and Mexico, greatly embellished by the Viceroy, count of Revillagigedo, may, at present vie with the finest towns of Europe. The great square, represented in the third plate, is the spot on which formerly stood the spacious temple of Mexitli; which, like all the *teocalli*, or houses of the Mexican divinities, was a pyra-

midal edifice, resembling the Babylonian monument dedicated to Jupiter Belus. The palace of the Viceroy of New Spain is on the right; a building of simple architecture, belonging originally to the family of Cortez, which is that of the Marquis del Valle de Oaxaca, Duke of Monteleone. In the middle of the engraving is the cathedral, part of which (el sagrario) is in the ancient Indian or Moorish style, vulgarly called Gothic. Behind the cupola of the sagrario, at the corner of the street Del Indio Triste and that of Tacuba, stood formerly the palace of the King of Axajacatl, where Montezuma lodged the Spaniards on their arrival at Tenochtitlan. The palace of Montezuma was on the right of the cathedral, opposite that of the present Viceroy. It appears to me useful to point out these localities, since they may be interesting to those, who study the history of the conquest of Mexico.

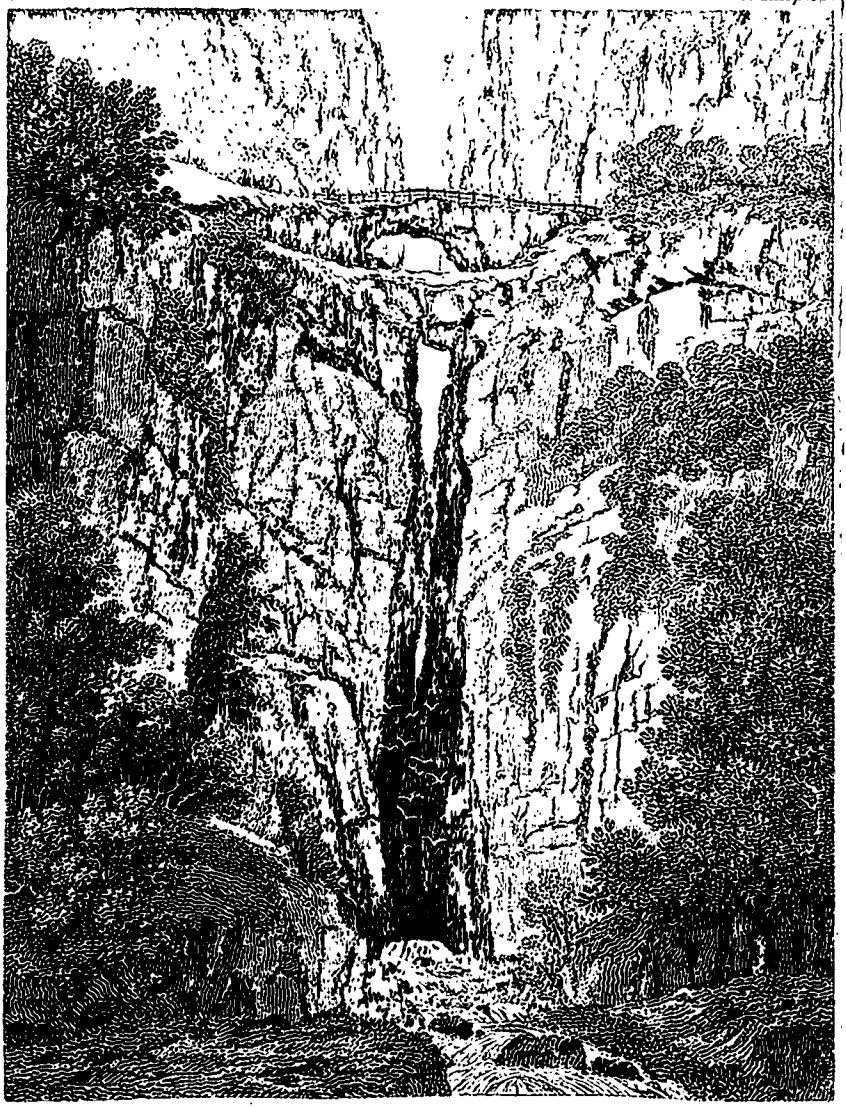
The Plaza Mayor, which must not be confounded with the great market of Tlatelolco, described by Cortez in his letters to the Emperor Charles the Fifth, is ornamented, since 1803, with the equestrian statue of Charles the Fourth, executed at the expense of the Viceroy, the Marquis of Branciforte. This statue of bronze is in the purest style, and highly finished; it was drawn, modelled, cast, and erected by the same artist, Don Manuel Tolsa, a native of Valentia in Spain, and director of the class of sculpture in

the academy of the fine arts at Mexico. We know not which most to admire, the talents of this artist, or the courage and perseverance which he displayed in a country where every thing was to be created, and numberless obstacles to be surmounted. This capital work succeeded on the first cast. The statue weighs nearly twenty-three thousand kilogrammes, and it is two decimetres higher than the equestrian statue of Lewis the Fourteenth, which stood in the place Vendome at Paris. The artist had the good taste not to gild the horse, which is simply coated with a brownish olive varnish. As the buildings around the square are in general not lofty, the sky forms the back ground to the statue; a circumstance which, on the ridge of the Cordilleras, where the atmosphere is of a deep blue, produces a very picturesque effect. I was at Mexico when this enormous mass was removed from the foundery to the Plaza Mayor, a distance of about sixteen hundred metres, which it took five days to accomplish. The means employed by Mr. Tolsa to raise it on a pedestal of a beautiful Mexican marble were very ingenious, and would deserve a minute description.

The great square of Mexico is at present of an irregular form, since that which contains the shops of the Parian has been built within it, contrary to the plan of Cortez. To correct the appearance of this irregularity, it has been thought

necessary, to place the equestrian statue, which the Indians call *the great horse*, in a particular enclosure, paved with large slabs of porphyry, and raised more than fifteen decimetres above the level of the adjacent streets. The oval, the great axis of which is a hundred metres, is encircled by four fountains, and closed, to the great discontent of the natives, by four gates, the bars of which are ornamented in bronze. The engraving is a faithful copy of a drawing on a larger scale by Mr. Ximeno, a distinguished artist, and director of the class of painting in the academy of Mexico. The figures in the drawing placed beyond the enclosure, are in the dress of the Guachinangoes, or lower class of the Mexican people *.

* See my Political Essay on the Kingdom of New-Spain, French edition, pages 119, 168, 177, and 186.



Natural Bridges of Icononzo.

Pub.d by Longman Hurst. Rees. Orme. & Brown. Aug.t 1, 1814.

NATURAL BRIDGES

OF

ICONONZO.

PLATE IV.

AMIDST the majestic and varied scenery of the Cordilleras, the vallies most powerfully affect the imagination of the European traveller. The stupendous height of the mountains can be discerned only at a considerable distance, and from the low lands which extend along the coasts to the foot of the central chain. The elevated plains, which encircle the summits of these mountains covered with perpetual snow, are for the most part from two thousand five hundred to three thousand metres above the level of the ocean. This circumstance weakens in some measure the effect produced by the colossal masses of Chimborazo, Cotopaxi, and Antisana, viewed from the lofty plains of Riobamba and Quito: while, on the contrary, the vallies of the Cordilleras, deeper and narrower than those of

the Alps and the Pyrenees, present scenes of the wildest aspect, and fill the soul with astonishment and terror. These vallies are crevices, the sides and bottom of which are clothed with vigorous vegetation; and the depth in many parts is so great, that were Vesuvius and the Puy de Dome seated in these abysses, their summits would not exceed the ridge of the nearest mountains. M. Ramond's interesting travels have made us acquainted with the valley of Ordesa, which descends from Mount Perdu, and the mean depth of which is nearly nine hundred metres (four hundred and fifty-nine toises). In travelling on the ridge of the Andes, from Pasto to the town of Ibarra, and descending from Loxa to the banks of the river of Amazons, M. Bonpland and myself traversed the well-known crevices of Chota and Cutaco, which on measuring I found to be, one fifteen hundred, and the other thirteen hundred metres in perpendicular depth. To give a more complete idea of the grandeur of these geological phenomena, it must be remarked, that the bottom of these crevices is only a fourth part less elevated above the level of the sea, than the passages of St. Gothard and Mount Cenis. The valley of Icononzo, or Pandi, part of which is represented in the fourth plate, is less remarkable for its dimensions, than for the singular form of its rocks, which seem to have been carved by the hand of

man. Their naked and barren summits present the most picturesque contrast with the tufts of trees and shrubs, which cover the brinks of the crevice. The small torrent, which has made itself a passage through the valley of Icononzo, is called Rio de la Summa Paz, and falls from the eastern chain of the Andes, which, in the kingdom of New Grenada, divides the basin of the river Magdalena from the vast plains of the Meta, the Guaviare, and the Orinoco. This torrent, confined in a bed almost inaccessible, could not have been crossed but with extreme difficulty, if nature had not provided two bridges of rocks, which are justly considered in the country as among the objects most worthy the attention of travellers. In the month of September, 1801, we passed these natural bridges of Icononzo, on our journey from Santa Fé de Bogota to Popayan and Quito.

The name of Icononzo is that of an ancient village of the Muysco Indians, situate at the southern extremity of the valley, of which only a few scattered huts now remain. The nearest inhabited place to this remarkable spot is the small village of Pandi, or Mercadillo, at the distance of a quarter of a league toward the north-east. The road from Santa Fé to Fusagasuga, (lat. 4° 20′ 21″ north; long. 5^{h} 7′ 14″), and thence to Pandi, is one of the most difficult and least frequented to be found in the Cordil-

leras. The traveller must feel a passionate enthusiasm for the beauties of nature, who prefers the dangerous descent of the desert of San Fortunato, and the mountains of Fusagasuga, leading towards the natural bridges of Icononzo, to the usual road from the elevated plain of Bogota, by the Mesa de Juan Diaz to the banks of the Magdalena.

The deep crevice through which rushes the torrent of the Summa Paz, is in the centre of the valley of Pandi. Near the bridge the waters keep their direction from east to west, during a length of four thousand metres. The river forms two beautiful cascades at the point where it enters the crevice on the west of Doa, and where it escapes in its descent towards Melgar. This crevice was probably formed by an earthquake, and resembles an enormous vein, from which the mineral substance has been extracted by the labor of miners. The neighbouring mountains are of gritstone, with a clay cement; this formation, which reposes on the primitive schists (thonschiefer) of Villeta, extends from the mountain of rock salt of Zipaquira to the basin of the river Magdalena. This mountain contains also the strata of coal of Canoas, or Chipa, which are worked near the great fall of Tequendama *.

In the valley of Icononzo, the gritstone *(sand-*

* See Plate VI, French folio edition.

stein) is composed of two distinct rocks; one, extremely compact and quartzose, with a small portion of cement, and scarcely any fissures of stratification, lies on a schistose gritstone *(sandsteinschiefer)*, with a fine grain, and divided into an infinite number of small strata, extremely thin, and almost horizontal. It is probable, that the compact and quartzose stratum, when the crevice was formed, resisted the shock which rent these mountains; and that it is the continuity of this stratum, which serves as a bridge to cross from one side of this valley to the other. This natural arch is fourteen metres and a half in length, and twelve metres seven decimetres in breadth: its thickness in the centre is two metres four decimetres. Experiments carefully made on the fall of bodies, and with a chronometer by Berthoud, gave us ninety-seven metres seven decimetres for the height of the upper bridge above the level of the waters of the torrent. A well-informed person, who has an agreeable country residence in the beautiful valley of Fusagasaga, Don Jorge Lozano, had already measured this height with a line, and found it to be one hundred and twelve varas (93·4^{m}); the mean depth of the torrent appears to be about six metres. The Indians of Pandi have formed, for the safety of travellers, who, however, seldom visit this desert country, a

small balustrade of reeds, which extends along the road leading to the upper bridge.

Sixty feet below this natural bridge is another, to which we are led by a narrow pathway, which descends upon the brink of the crevice. Three enormous masses of rock are fallen so as to support each other. That in the middle forms the key of the arch; an accident which might have given the natives the idea of arches in masonry, unknown to the people of the new world, as well as to the ancient inhabitants of Egypt. I shall not decide the question whether these masses of rock have been projected from a great distance, or whether they are the fragments of an arch broken on the spot, but originally like the upper natural bridge. The latter conjecture seems probable, from a similar event which happened to the Coliseum at Rome, where, in a half ruined wall, several stones were stopped in their descent, because in falling they accidentally formed an arch.

In the middle of the second bridge of Icononzo is a hollow of more than eight metres square, through which the bottom of the abyss is perceived. We there made our experiments on the fall of bodies. The torrent seems to flow through a dark cavern, whence arises a lugubrious noise, caused by the numberless flights of nocturnal birds that haunt the crevice, and

which we were led at first to mistake for those bats of gigantic size so well known in the equinoctial regions. Thousands of them are seen flying over the surface of the water. The Indians assured us, that these birds are of the size of a fowl, with a curved beak and an owl's eye. They are called cacas; and the uniform colour of their plumage, which is a brownish gray, leads me to think, that they belong to the genus of the caprimulgus, the species of which are so various in the Cordilleras. It is impossible to catch them, on account of the depth of the valley; and they can be examined only by throwing down rockets to illumine the sides of the crevice.

The height of the natural bridge of Icononzo above the ocean is eight hundred and ninety-three metres. A phenomenon, similar to the upper bridge, of which we have just given the description, exists in the mountains of Virginia, in the county of Rockbridge. This Mr. Jefferson has examined with an attention, that distinguishes all the observations of that excellent naturalist *. The natural bridge of Cedar Creek in Virginia is a calcareous arch of twenty-seven metres at its opening; its height above the waters of the river is seventy metres.

The earthen bridge (Rumichaca), which we found on the declivity of the porphyritic moun-

* Notes on Virginia, p. 56.

tains of Chumban, in the province of Los Pastos; the bridge of Madre de Dios, called Danto, near Totonilco, in Mexico; the pierced rock near Grandola, in the province of Alentejo, in Portugal; are geological phenomena, which bear some resemblance to the bridge of Icononzo: but I doubt whether in any part of the Globe a phenomenon has been discovered so extraordinary as that of the three masses of rocks, which support each other by forming a natural arch.

I sketched the natural bridges of Icononzo from the northern part of the valley, with a side view of the arch. The first proofs of this plate indicate erroneously Mr. Gmelin of Rome as the engraver, instead of M. Bouquet of Paris.

PASSAGE OF QUINDIU,

IN THE

CORDILLERA OF THE ANDES.

PLATE V.

In the kingdom of New Grenada, from 2° 30' to 5° 15' of northern latitude, the Cordillera of the Andes is divided into three parallel chains, of which the two lateral only are covered at very considerable heights with gritstone, and other secondary formations. The eastern chain divides the valley of the river Magdalena from the plains of Rio Meta. The natural bridges of Icononzo, of which we have just given the description, are situate on its western declivity. Its highest summits are the Paramo de la Summa Paz, and that of Chingasa. Neither of these attains the region of perpetual snows. The central chain divides the waters between the basin of the river Magdalena and that of Rio Cauca. It often attains the limits of the perpetual snows, and greatly surpasses it in the

colossal summits of Guanacas, Baragan, and Quindiu. At the rising and setting of the Sun, this central chain offers a magnificent spectacle to the inhabitants of Santa Fé; and reminds us, though on a much more stupendous scale, of the view of the Alps in Switzerland.

The western chain of the Andes separates the valley of Cauca from the province of Choco, and the coasts of the South Sea. Its elevation is scarcely fifteen hundred metres; it sinks so low between the sources of the Rio Atracto, and those of Rio San-Juan, that we can scarcely follow its course into the isthmus of Panama.

These three chains of mountains are blended together in the sixth and seventh degrees of north latitude. They form a single group to the south of Popayan, in the province of Pasto. We must not, however, confound them with the division of the Cordilleras observed by Bouguer and La Condamine in the kingdom of Quito, from the equator to the second degree of south latitude.

The city of Santa Fé de Bogota is situate on the west of the Paramo of Chingasa, in an elevated plain, which is two thousand six hundred and fifty metres above the level of the sea, and which extends to the ridge of the eastern Cordilleras. This particular structure of the Andes obliges the traveller from Santa Fé to Popayan and the banks of the Cauca, to descend the

eastern chain, either by the Mesa and Tocayma, or the natural bridges of Icononzo, traverse the valley of the river Magdalena, and cross the central chain. The most frequented passage is that of the Paramo de Guanacas, described by Bouguer, on his return from Quito to Carthagena. Pursuing this road the traveller crosses the ridge of the central Cordilleras in a single day, and amidst an inhabited country. We preferred the passage of the mountain of Quindiu, or Quindio, between the cities of Ibague and Carthago, the entrance of which passage is represented in the fifth plate *. These geographical explanations seemed necessary to give a clear idea of the position of a place, which is not to be found in the most accurate charts of South America, even in that of La Cruz.

The mountain of Quindiu, (lat. 4° 36′, long. 5h 12′) is considered as the most difficult passage in the Cordilleras of the Andes. It is a thick uninhabited forest, which in the finest season cannot be traversed in less than ten or twelve days. Not even a hut is to be seen, nor can any means of subsistence be found. Travellers at all times of the year furnish themselves with a month's provision, since it often happens, that by the melting of the snows, and the sudden

* See Plate V, folio edition.

swell of the torrents, they find themselves so circumstanced, that they can descend neither on the side of Carthago, nor that of Ibague. The highest point of the road, the Garito del Paramo, is three thousand five hundred and five metres above the level of the sea. As the foot of the mountain, towards the banks of the Cauca, is only nine hundred and sixty metres, the climate there is in general mild and temperate. The pathway, which forms the passage of the Cordilleras, is only three or four decimetres in breadth, and has the appearance in several places of a gallery dug, and left open to the sky. In this part of the Andes, as almost in every other, the rock is covered with a thick stratum of clay. The streamlets, which flow down the mountains, have hollowed out gullies six or seven metres deep. Along these crevices, which are full of mud, the traveller is forced to grope his passage; the darkness of which is increased by the thick vegetation, that covers the opening above. The oxen, which are the beasts of burden commonly made use of in this country, can scarcely force their way through these galleries, some of which are two thousand metres in length; and if perchance the traveller meets them in one of these passages, he finds no means of avoiding them, but by turning back, and climbing the earthen wall, which borders the crevice, and keeping

himself suspended, by laying hold of the roots, which penetrate to this depth from the surface of the ground.

We traversed the mountain of Quindiu in the month of October, 1801, on foot, followed by twelve oxen, which carried our collections and instruments, amidst a deluge of rain, to which we were exposed during the last three or four days, in our descent on the western side of the Cordilleras. The road passes through a country full of bogs, and covered with bamboos. Our shoes were so torn by the prickles, which shoot out from the roots of these gigantic gramina, that we were forced like all other travellers, who dislike being carried on men's backs, to go barefooted. This circumstance, the continual humidity, the length of the passage, the muscular force required to tread in a thick and muddy clay, the necessity of fording deep torrents of icy water, render this journey extremely fatiguing: but, however painful, it is accompanied by none of those dangers, with which the credulity of the people alarm travellers. The road is narrow, but the places where it skirts precipices are very rare. As the oxen are accustomed to put their feet in the same tracks, they form small furrows across the road, separated from each other by narrow ridges of earth. In very rainy seasons, these ridges are covered by water, which renders the traveller's step

doubly uncertain, since he knows not whether he places his foot on the ridge, or in the furrow. As few persons in easy circumstances travel on foot, in these climates, through roads so difficult, during fifteen or twenty days together, they are carried by men in a chair, tied on their back; for in the present state of the passage of Quindiu, it would be impossible to go on mules. They talk in this country of going on a man's back (andar en carguero), as we mention going on horseback, no humiliating idea is annexed to the trade of carqueroes; and the men who follow this occupation are not Indians, but mulattoes, and sometimes even whites. It is often curious to hear these men, with scarcely any covering, and following a profession which we should consider so disgraceful, quarrelling in the midst of a forest, because one has refused the other, who pretends to have a whiter skin, the pompous title of *don*, or of *su merced*. The usual load of a carguero is six or seven arrobas (from seventy-five to eighty-eight kilogrammes*): those who are very strong, carry as much as nine arrobas. When we reflect on the enormous fatigue, to which these miserable men are exposed, journeying eight or nine hours a day over a mountainous country; when we know, that their

* For the correspondent English and French weights, see the table at the end of the volume.

backs are sometimes as raw as those of beasts of burden, and that travellers have often the cruelty to leave them in the forests, when they fall sick; that they earn by a journey from Ibague to Carthago only twelve or fourteen piastres (sixty or seventy-francs) in a space of fifteen, and sometimes even twenty-five or thirty days; we are at a loss to conceive, how this employment of a carguero, one of the most painful which can be undertaken by man, is eagerly embraced by all the robust young men, who live at the foot of the mountains. The taste for a wandering and vagabond life, the idea of a certain independence amidst forests, leads them to prefer this employment to the sedentary and monotonous labour of cities.

The passage of the mountain of Quindiu is not the only part of South America, which is traversed on the backs of men. The whole of the province of Antioquia is surrounded by mountains so difficult to pass, that they who dislike entrusting themselves to the skill of a carrier, and who are not strong enough to travel on foot from Santa Fé de Antioquia to Bocca de Nares, or Rio Samana, must relinquish all thoughts of leaving the country. I was acquainted with an inhabitant of this province, so immensely bulky, that he had not met with more than two mulattoes capable of carrying him; and it would have been impossible for him

to return home, if these two carriers had died, while he was on the banks of the Magdalena, at Mompox or Honda. The number of young men, who undertake the employment of beasts of burden at Choco, Ibague, and Medellin, is so considerable, that we sometimes met a file of fifty or sixty. A few years ago, when a project was formed to make the passage from Nares to Antioquia passable for mules, the carguéroes presented formal remonstrances against mending the road, and the government was weak enough to yield to their clamours. We may here observe, that a class of men near the mines of Mexico have no other employment, than that of carrying other men on their backs. In these climates the indolence of the whites is so great, that every director of a mine has one or two Indians at his service, who are called his horses (cavallitoes), because they are saddled every morning, and, supported by a small cane, and bending forwards, they carry their master from one part of the mine to another. Among the cavallitoes, or carguéroes, those who have a sure foot and easy step are known and recommended to travellers. It is distressing to hear the qualities of man spoken of in terms, by which we are accustomed to denote the gait of mules and horses. The persons who are carried in a chair by a carguero must remain several hours motionless, and leaning backwards; the least mo-

tion is sufficient to throw down the carrier, and his fall would be so much the more dangerous, as the carguero, too confident in his skill, chooses the most rapid declivities, or crosses a torrent on a narrow and slippery trunk of a tree. These accidents are however rare, and those which happen must be attributed to the imprudence of travellers, who, frightened at a false step of the carguero, leap down from their chairs.

The fifth plate represents a very picturesque view, seen at the entrance of the mountain of Quindiu, near Ibague, at a post called the foot of the Cuesta. The truncated cone of Tolima, covered with perpetual snow, and reminding us by its form of Cotopaxi and Cayambe, appears above the mass of granitic rocks. The small river of Combeima, which mingles its waters with those of Rio Cuello, winds in a narrow valley, and forces its way across a thicket of palm trees. A part of the town of Ibague, the great valley of the river Magdalena, and the eastern chain of the Andes, are seen in the back ground. In the fore ground is a band of cargueroes coming up the mountain, representing the mode of fastening on the shoulders the chair made of bamboo wood, which is steadied by a headstall similar to that worn by horses and oxen. The roll in the hand of the third carguero is the roof, or rather movable house,

which is to shelter the travellers who cross the forests of Quindiu. When they reach Ibague, and prepare for the journey, they pluck in the neighbouring mountains several hundred leaves of the vijao, a plant of the family of the bananas, which forms a genus approaching the thalia, and which must not be confounded with the heliconia bihai. These leaves, which are membranous and silky, like those of the musa, are of an oval form, fifty-four centimetres (twenty inches) long, and thirty-seven centimetres (fourteen inches) in breadth. Their lower surface is a silvery white, and covered with a farinaceous substance, which falls off in scales. This peculiar varnish enables them to resist the rain during a long time. In gathering these leaves, an incision is made in the middle rib, which is the continuation of the footstalk; and this serves as a hook to suspend them, when the movable roof is formed. On taking it down, they are spread out and carefully rolled up in a cylindrical bundle. It requires about a hundred weight of leaves (50 kilogrammes) to cover a hut large enough to hold six or eight persons. When the travellers reach a spot in the midst of the forests, where the ground is dry, and where they propose to pass the night, the cargueroes lop a few branches from the trees, with which they make a tent. In a few minutes this slight timber work is divided into squares by the stalks of

some climbing plant, or threads of the agave, placed in parallel lines three or four decimetres from each other. The vijáo leaves meanwhile have been unrolled, and are now spread over the above work, so as to cover each other like the tiles of a house. These huts thus hastily built, are cool and commodious. If during the night the traveller feels the rain, he points out the spot where it enters, and a single leaf is sufficient to obviate the inconvenience. We passed several days in the valley of Boquia under one of these leafy tents, which was perfectly dry amidst violent and incessant rains.

The mountain of Quindiu is one of the richest spots in useful and interesting plants. Here we found the palm-tree (ceroxylon andicola), the trunk of which is covered with a vegetable wax; the passiflora in trees; and the majestic mutisia grandiflora, with flowers of a scarlet colour sixteen centimetres (six inches long),

FALL OF THE TEQUENDAMA.

PLATE VI.

THE elevated plain, on which stands the city of Santa Fé de Bogotá, resembles in a variety of circumstances that which is surrounded by the Mexican lakes. Each of these plains is higher than the summit of St. Bernard, the first being two thousand six hundred and sixty, and the second two thousand two hundred and seventy-seven metres above the level of the ocean. The valley of Mexico is bounded by a circular wall of mountains of porphyry, and its centre is covered with water: for the numerous torrents, which rush into the valley, found no outlet, until the Europeans had dug the canal of Huehuetoca. The plain of Bogota is also encircled by lofty mountains; and the perfect level of the soil, its geological structure, the form of the rocks of Suba and Facatativa, which rise like small islands in the midst of the savannahs, seem all to indicate the existence of an ancient lake. The river of Funzha, usually called Rio de

Bogota, into which flow the waters of the valley, forced its way through the mountains to the south-west of Santa Fé. Near the farm of Tequendama, this river rushes from the plain by a narrow outlet into a crevice, which descends towards the basin of the river Magdalena. Were an attempt made to close this passage, which is the sole opening out of the valley of Bogota, these fertile plains would gradually be converted into a sheet of water like the Mexican lake.

It is easy to perceive the influence of these geological facts on the traditions of the ancient inhabitants of these countries. We shall not decide, whether merely from the aspect of the country a people not far removed from civilization were led to form hypotheses on the first revolutions of the Globe; or whether the great inundations of the valley of Bogota were sufficiently recent, to have left traces on the memory of men. Historical traditions are every where blended with religious opinions; and it may not be uninteresting in this place to mention those, which the conqueror of this country, Gonzalo Ximenes de Quesada, found disseminated among the Muyscas, Panchas, and Natagaymas, when he first penetrated into the mountains of Cundinamarca *.

* See Lucas Fernandez Piedrahita, Obispo de Panama,

In the remotest times, before the Moon accompanied the Earth, according to the mythology of the Muysca or Mozca Indians, the inhabitants of the plain of Bogota lived like barbarians, naked, without agriculture, without any form of laws or worship. Suddenly appeared among them an old man, who came from the plains situate on the east of the Cordillera of Chingasa; and who appeared to be of a race unlike that of the natives, having a long and bushy beard. He was known by three distinct appellations, Bochica, Nemquetheba, and Zuhè. This old man, like Manco-Capac, instructed men how to clothe themselves, build huts, till the ground, and form themselves into communities. He brought with him a woman, to whom also tradition gives three names, Chia, Yubecayguaya, and Huythaca. This woman, extremely beautiful, and no less malignant, thwarted every enterprise of her husband for the happiness of mankind. By her skill in magic, she swelled the river of Funzha, and inundated the valley of Bogota. The greater part of the inhabitants perished in this deluge; a few only found refuge on the summits of the neighbouring mountains. The old man, in anger, drove the beautiful Huythaca far from the Earth, and she became the Moon, which

Historia general del nuevo Reyno de Grenada, page 17; a work composed from the Mss. of Quesada,

began from that epocha to enlighten our planet during the night. Bochica, moved with compasion for those who were dispersed over the mountains, broke with his powerful arm the rocks that enclosed the valley, on the side of Canoas and Tequendama. By this outlet he drained the waters of the lake of Bogota; he built towns, introduced the worship of the Sun, named two chiefs, between whom he divided the civil and ecclesiastical authority, and then withdrew himself, under the name of Idacanzas, into the holy valley of Iraca, near Tunja, where he lived in the exercise of the most austere penitence for the space of two thousand years.

This Indian fable, which attributes the cataract of Tequendama to the founder of the empire of Zaque, contains a number of peculiarities, which we find scattered in the religious traditions of several nations of the old continent. The good and evil principle here seem to be personified in the old man Bochica and his wife Huythaca. The remote period, when the Moon did not exist, reminds us of the boast of the Arcadians on the antiquity of their origin. The planet of the night is represented as a malignant being, augmenting the humidity of the Earth; while Bochica, child of the Sun, dries the soil, promotes agriculture, and becomes the benefactor of the Muyscas, as the first Inca was that of the Peruvians.

The traveller, who views the tremendous scenery of the cataract of Tequendama, will not be surprised, that rude tribes should have attributed a miraculous origin to rocks, which seem to have been cut by the hand of man; to that narrow gulf, into which falls headlong the mass of waters that issue from the valley of Bogota; to those rainbows reflecting the most vivid colours, and of which the forms vary every instant; to that column of vapour, rising like a thick cloud, and seen at five leagues distance from the walks around Santa Fé. The sixth plate can give but a very feeble idea of this majestic spectacle. If it be difficult to describe the beauties of cataracts, it is still more difficult to make them felt by the aid of the pencil. The impression they leave on the mind of the observer depends on the concurrence of a variety of circumstances. The volume of water must be proportioned to the height of the fall, and the scenery around must wear a wild and romantic aspect. The Pissevache and the Staubbach, in Switzerland, are lofty, but their masses of water are not very considerable. The Niagara and the fall of the Rhine, on the contrary, furnish an enormous volume of water, but their height is not above fifty metres. A cataract surrounded by hills only produces far less effect, than the falls of water which rush into the profound and narrow vallies of the Alps, the Pyrenees, and, above all,

the Cordilleras of the Andes. Independent of the height and mass of the column of water, the figure of the landscape, and the aspect of the rocks; it is the luxuriant form of the trees and herbaceous plants, their distribution into groups, or into scattered thickets, the contrast of those craggy precipices and the freshness of vegetation, which stamp a peculiar character on these great scenes of nature. The fall of Niagara, placed beneath a northern sky, in the region of pines and oaks, would be still more beautiful, were its drapery composed of heliconias, palms, and arborescent ferns. The cataract of Tequendama forms an assemblage of every thing that is sublimely picturesque in beautiful scenery. This fall is not however, as it is commonly believed to be in the country, and repeated by naturalists in Europe, the loftiest cataract on the Globe: the river does not rush, as Bouguer relates, into a gulf of five or six hundred metres of perpendicular depth; but there scarcely exists a cataract, which from so lofty a height precipitates so voluminous a mass of waters. The Rio de Bogota, after replenishing the marshes between the village of Facatativa and Fontibon, is still forty-four metres broad at Canoas, a little above the fall; which is half the breadth of the Seine at Paris, between the Louvre and the Palace of the Arts. The river narrows considerably near its fall, where the crevice, which

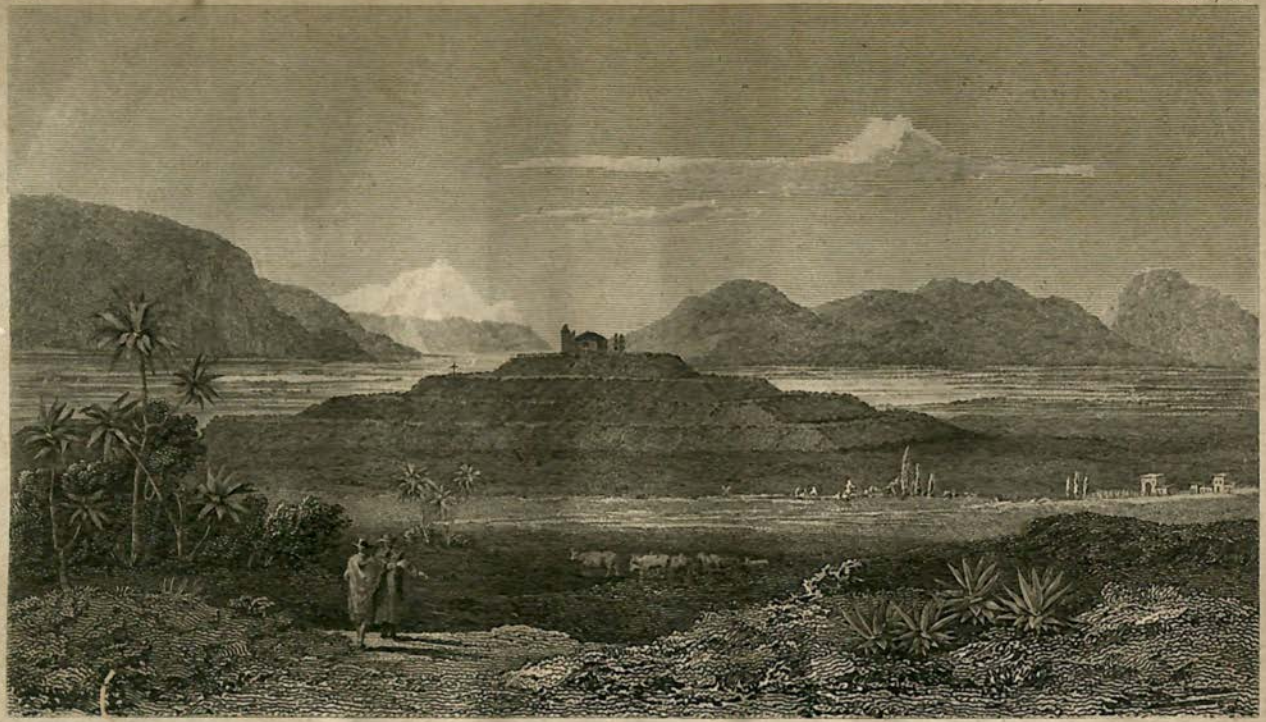
appears to have been formed by an earthquake, is only ten or twelve metres wide. In very dry seasons, the volume of water, which, at a double bound, falls to a depth of a hundred and seventy-five metres, still presents a side view of ninety square metres. The two figures of men, represented in the drawing, serve as a scale of the total height of the fall. The point where these men are placed, on the upper bank, is two thousand four hundred and sixty-seven metres above the level of the ocean. From this point to the river Magdalena, the small river of Bogota, called at the foot of the cataract Rio de la Mesa, Rio de Tocayma, or Rio del Collegio, has still a fall of two thousand one hundred metres, which is more than one hundred and forty metres in every common French league.

The road, which leads from the town of Santa Fé to the fall of Tequendama, passes by the village of Suacha, and the great farm of Canoas, well known for its fine crops of wheat. The enormous mass of vapours, which continually rises from the cataract, and which is precipitated by its contact with the cold air, contributes much, it is believed, to the great fertility of this part of the plain of Bogota. At a small distance from Canoas, on the height of Chipa, a magnificent prospect astonishes the traveller by the variety of its contrasts. Leaving the cultivated plain rich in corn, he finds himself surrounded,

not only with the aralia, the alstonia theæformis, the begonia, and the yellow bark-tree (cinchona cordifolia), but with oaks, with elms, and other plants, the growth of which recalls to his mind the vegetation of Europe; when suddenly he discovers as from a terrace, and at his feet, a country producing the palm, the banana, and the sugar cane. The crevice into which the Rio de Bogota throws itself communicating with the plains of the warm region *(tierra caliente)*, a few palm trees have sprung up at the foot of the cataract. This particular circumstance leads the inhabitants of Santa Fé to observe, that the cataract of the Tequendama is so high, that the water falls in one bound, from a cold *(tierra fria)* into a warm country. We are sensible, that a difference of one hundred and seventy-five metres of height is too inconsiderable, to have much influence on the temperature of the air; and it is not on account of the height of the soil, that the vegetation of the plain of Canoas contrasts with that of the ravine. If the rock of Tequendama, which is a gritstone with a clayey basis, were not quite perpendicular; and if the elevated plain of Canoas were sheltered like the crevice, the palm trees, which flourish at the foot of the cataract, would have pushed their migrations to the upper level of the river. The appearance of this vegetation is so much the more interesting to the inhabitants of the valley

of Bogota, as they live in a climate where the thermometer descends very often to the freezing point.

I succeeded, but not without danger, in carrying instruments into the crevice itself, at the foot of the cataract. It takes three hours to reach the bottom by a narrow path *(camino de la Culebra)*, which leads to the ravine of La Povasa. Although the river loses in falling a great part of its water, which is reduced into vapours, the rapidity of the lower current forces the observer to keep at the distance of nearly one hundred and forty metres from the basin dug out by the fall. A few feeble rays of noon fall on the bottom of the crevice. The solitude of the place, the richness of the vegetation, and the dreadful roar that strikes upon the ear, contribute to render the foot of the cataract of Tequendama one of the wildest scenes, that can be found in the Cordilleras.



A View of the Pyramid of Cholula, near Mexico.

PYRAMID OF CHOLULA.

PLATE VII.

AMONG those swarms of nations, which, from the seventh to the twelfth century of the Christian era, successively inhabited the country of Mexico, five are enumerated, the Toltecks, the Cicimecks, the Acolhuans, the Tlascaltecks, and the Aztecks, who, notwithstanding their political divisions, spoke the same language, followed the same worship, and built pyramidal edifices, which they regarded as *teocallis*, that is to say, the houses of their gods. These edifices were all of the same form, though of very different dimensions; they were pyramids, with several terraces, and the sides of which stood exactly in the direction of the meridian, and the parallel of the place. The teocalli was raised in the midst of a square and walled enclosure, which, somewhat like the περιβολος of the Greeks, contained gardens, fountains, the dwellings of the priests, and sometimes arsenals; since each house of a Mexican divinity, like the ancient temple or

Baal Berith, burnt by Abimelech, was a strong place. A great staircase led to the top of the truncated pyramid, and on the summit of the platform were one or two chapels, built like towers, which contained the colossal idols of the divinity, to whom the teocalli was dedicated. This part of the edifice must be considered as the most consecrated place; like the ναος, or rather the σηκος, of the Grecian temples. It was there also, that the priests kept up the sacred fire. From the peculiar construction of the edifice we have just described, the priest who offered the sacrifice was seen by a great mass of the people at the same time: the procession of the *teopixqui*, ascending or descending the staircase of the pyramid, was beheld at a considerable distance. The inside of the edifice was the burial place of the kings and principal personages of Mexico. It is impossible to read the descriptions, which Herodotus and Diodorus Siculus have left us of the temple of Jupiter Belus, without being struck with the resemblance of that Babylonian monument to the teocallis of Anahuac.

At the period when the Mexicans, or Aztecks, one of the seven tribes of the Anahuatlacks, (inhabitants of the banks of rivers), took possession, in the year 1190, of the equinoctial region of New Spain, they already found the pyramidal monuments of Teotihuacan, of Cholula, or

Cholollan, and of Papantla. They attributed these great edifices to the Toltecks, a powerful and civilized nation, who inhabited Mexico five hundred years earlier, who made use of hieroglyphical characters, who computed the year more precisely, and had a more exact chronology than the greater part of the people of the old continent. The Aztecks knew not with certainty what tribe had inhabited the country of Anahuac before the Toltecks; and consequently the belief, that the houses of the deity of Teotihuacan and of Cholollan was the work of the Toltecks, assigned them the highest antiquity they could conceive. It is however possible, that they might have been constructed before the invasion of the Toltecks; that is, before the year 648 of the vulgar era. We ought not to be astonished, that no history of any American nation should precede the seventh century; and that the annals of the Toltecks should be as uncertain as those of the Pelasgi and the Ausonians. The learned Mr. Schloezer has clearly proved, that the history of the North of Europe reaches no higher than the tenth century, an epocha when Mexico was in a more advanced state of civilization than Denmark, Sweden, and Russia.

The teocalli of Mexico was dedicated to Tezcatlipoca, the first of the Azteck divinities after Teotl, who is the supreme and invisible Being;

and to Huitzilopochtli, the God of war. It was built by the Aztecks, on the model of the pyramids of Teotihuacan, six years only before the discovery of America by Christopher Columbus. This truncated pyramid, called by Cortez the principal temple, was ninety-seven metres in breadth at its basis, and nearly fifty-four metres in height. It is not astonishing, that a building of these dimensions should have been destroyed a few years after the siege of Mexico. In Egypt there scarcely remains any vestiges of the enormous pyramids, which towered amidst the waters of the lake Mœris, and which Herodotus says were ornamented with colossal statues. The pyramids of Porsenna, of which the description seems somewhat fabulous, and four of which, according to Varro, were more than eighty metres in height, have equally disappeared in Etruria *.

But if the European conquerors overthrew the teocallis of the Aztecks, they did not alike succeed in destroying more ancient monuments, that are attributed to the Tolteck nation. We shall give a succinct description of these monuments, remarkable for their form and magnitude.

The group of the pyramids of Teotihuacan is in the valley of Mexico, eight leagues north-

* Plin. xxxvi, 19.

east from the capital, in a plain that bears the name of Micoatl, or the *Path of the Dead.* There are two large pyramids dedicated to the Sun (Tonatiuh), and to the Moon (Meztli); and these are surrounded by several hundreds of small pyramids, which form streets in exact lines from north to south, and from east to west. Of these two great teocallis, one is fifty-five, the other forty-four metres in perpendicular height. The basis of the first is two hundred and eight metres in length; whence it results, that the Tonatiuh Yztaqual, according to Mr. Oteyza's measurement, made in 1803, is higher than the Mycerinus, or third of the three great pyramids of Geeza in Egypt, and the length of its base nearly equal to that of the Cephren. The small pyramids, which surround the great houses of the Sun and the Moon, are scarcely nine or ten metres high; and served, according to the tradition of the natives, as burial places for the chiefs of the tribes. Around the Cheops and the Mycerinus in Egypt, there are eight small pyramids, placed with symmetry, and parallel to the fronts of the greater. The two teocallis of Teotihuacan had four principal stories, each of which was subdivided into steps, the edges of which are still to be distinguished. The nucleus is composed of clay mixed with small stones, and it is encased by a thick wall of te-

zontli, or porous amygdaloid*. This construction recalls to mind that of one of the Egyptian pyramids of Sakharah, which has six stories; and which, according to Pocock, is a mass of pebbles and yellow mortar, covered on the outside with rough stones. On the top of the great Mexican teocallis were two colossal statues of the Sun, and the Moon: they were of stone, and covered with plates of gold, of which they were stripped by the soldiers of Cortez. When bishop Zumaraga, a Franciscan monk, undertook the destruction of whatever related to the worship, the history, and the antiquities of the natives of America, he ordered also the demolition of the idols of the plain of Micoatl. We still discover the remains of a staircase built with large hewn stone, which formerly led to the platform of the teocalli.

On the east of the group of the pyramids of Teotihuacan, on descending the Cordillera towards the gulf of Mexico, in a thick forest, called Tajin, rises the pyramid of Papantla. This monument was by chance discovered scarcely thirty years ago, by some Spanish hunters; for the Indians carefully conceal from the whites whatever was an object of ancient veneration. The form of this teocalli, which

* Mandelstein of the German mineralogists.

had six, perhaps seven stories, is more tapering than that of any other monument of this kind: it is nearly eighteen metres in height, while the breadth of its basis is only twenty-five, and consequently about half as high as the pyramid of Caius Cestius at Rome, which is thirty-three metres. This small edifice is built entirely with hewn stones, of an extraordinary size, and very beautifully and regularly shaped. Three staircases lead to the top. The covering of its steps is decorated with hieroglyphical sculpture, and small niches, which are arranged with great symmetry. The number of these niches seems to allude to the three hundred and eighteen simple and compound signs of the days of the Cempohualilhuitl, or civil calendar of the Toltecks.

The greatest, most ancient, and most celebrated of the whole of the pyramidal monuments of Anahuac is the teocalli of Cholula. It is called in the present day the Mountain made by the hand of Man *(monte hecho a manos)*. At a distance it has the aspect of a natural hill covered with vegetation. This pyramid is represented in the seventh plate in its present ruined state.

A vast plain, the Puebla, is separated from the valley of Mexico by the chain of volcanic mountains, which extend from Popocatepetl towards

Rio Frio, and the peak of Telapon*. This plain, fertile though destitute of trees, is rich in memorials interesting to Mexican history. In it flourished the capitals of the three republics of Tlascalla, Huexocingo, and Cholula, which, notwithstanding their continual dissensions, resisted with no less firmness the despotism and usurping spirit of the Azteck kings.

The small city of Cholula, which Cortez, in his Letters to Charles V, compares with the most populous cities of Spain, contains at present scarcely sixteen thousand inhabitants. The pyramid is to the east of the city, on the road which leads from Cholula to Puebla. It is well preserved on the western side, which is that represented in the engraving. The plain of Cholula presents that aspect of barrenness, which is peculiar to plains elevated two thousand two hundred metres above the level of the ocean. A few plants of the agave and dracæna rise on the foreground, and at a distance the summit of the volcano of Orizaba is beheld covered with snow; a colossal mountain, five thousand two hundred and ninety-five metres of absolute height, and of which I have published a sketch in my Mexican Atlas, plate 17.

The teocalli of Cholula has four stories, all of

* See my Mexican Atlas, pl. III and IX.

equal height. It appears to have been constructed exactly in the direction of the four cardinal points; but as the edges of the stories are not very distinct, it is difficult to ascertain their primitive direction. This pyramidical monument has a broader basis than that of any other edifice of the same kind in the old continent. I measured it carefully, and ascertained, that its perpendicular height is only fifty metres; but that each side of its basis is four hundred and thirty-nine metres in length. Torquemada computes its height at seventy-seven metres; Betancourt, at sixty-five; and Clavigero, at sixty-one. Bernal Diaz del Castillo, a common soldier in the army of Cortez, amused himself by counting the steps of the staircases, which led to the platform of the teocallis: he found one hundred and fourteen in the great temple of Tenochtitlan, one hundred and seventeen in that of Tezcuco, and one hundred and twenty in that of Cholula. The basis of the pyramid of Cholula is twice as broad as that of Cheops; but its height is very little more than that of the pyramid of Mycerinus. On comparing the dimensions of the house of the Sun, at Teotihuacan, with those of the pyramid of Cholula, we see, that the people, who constructed these remarkable monuments, intended to give them the same height, but with bases, the length of which should be in the proportion of one to two. We find also

a considerable difference in the proportions between the base and the height in these various monuments: in the three great pyramids of Geeza, the heights are to the bases as 1 to 1·7; in the pyramid of Papantla covered with hieroglyphics, this ratio is as 1 to 1·4; in the great pyramid of Teotihuacan, as 1 to 3·7; and in that of Cholula as 1 to 7·8. This last monument is built with unbaked bricks *(xamilli)*, alternating with layers of clay. I have been assured by some Indians of Cholula, that the inside is hollow; and that, during the abode of Cortez in this city, their ancestors had concealed, in the body of the pyramid, a considerable number of warriors, who were to fall suddenly on the Spaniards: but the materials with which the teocalli is built, and the silence of the historians of those times*, give but little probability to this assertion.

It is certain, however, that in the interior of this pyramid, as in other teocallis, there are considerable cavities, which were used as sepulchres for the natives. A particular circumstance led to this discovery. Seven or eight years ago the road from Puebla to Mexico, which before passed to the north of the pyramid, was changed. In tracing the road, the first story was cut through, so that an eighth part remained isolated

* Cartas de Hernan Cortez; Mexico, 1770, p. 69.

like a heap of bricks. In making this opening a square house was discovered in the interior of the pyramid, built of stone, and supported by beams made of the wood of the deciduous cypress (cupressus disticha). The house contained two skeletons, idols in basalt, and a great number of vases, curiously varnished and painted. No pains were taken to preserve these objects, but it is said to have been carefully ascertained, that this house, covered with bricks and strata of clay, had no outlet. Supposing that the pyramid was built, not by the Toltecks, the first inhabitants of Cholula, but by prisoners made by the Cholulans from the neighbouring nations, it is possible, that they were the carcases of some unfortunate slaves, who had been shut up to perish in the interior of the teocalli. We examined the remains of this subterraneous house, and observed a particular arrangement of the bricks, tending to diminish the pressure made on the roof. The natives being ignorant of the manner of making arches, placed very large bricks horizontally, so that the upper course should pass beyond the lower. The continuation of this kind of stepwork served in some measure as a substitute for the Gothic vault, and similar vestiges have been found in several Egyptian edifices. An adit dug through the teocalli of Cholula, to examine its internal structure, would be an interesting operation; and it is singular,

that the desire of discovering hidden treasure has not prompted the undertaking. During my travels in Peru, in visiting the vast ruins of the city of Chimu, near Mansiche, I went into the interior of the famous Huaca de Toledo, the tomb of a Peruvian prince, in which Garci Gutierez de Toledo discovered, on digging a gallery, in 1576, massive gold amounting in value to more than five millions of francs, as is proved by the book of accounts, preserved in the mayor's office at Truxillo.

The great teocalli of Cholula, called also the *Mountain of unbaked bricks* (tlalchihualtepec), had an altar on its top, dedicated to Quetzalcoatl, the god of the air. This Quetzalcoatl, whose name signifies serpent clothed with green feathers, from *coatl*, serpent, and *quetzalli*, green feathers, is the most mysterious being of the whole Mexican mythology. He was a white and bearded man, like the Bochica of the Muyscas, of whom we spoke in our descriptions of the Cataract of Tequendama. He was high priest of Tula (Tollan), legislator, chief of a religious sect, which, like the Sonyasis and the Bouddhists of Indostan, inflicted on themselves the most cruel penances. He introduced the custom of piercing the lips and the ears, and lacerating the rest of the body with the prickles of the agave leaves, or the thorns of the cactus; and of putting reeds into the wounds, in order

that the blood might be seen to trickle more copiously. In a Mexican drawing in the Vatican library *, I have seen a figure representing Quetzalcoatl appeasing by his penance the wrath of the gods, when, thirteen thousand and sixty years after the creation of the World, (I follow the very vague chronology computed by Rios) a great famine prevailed in the province of Culan. The saint had chosen his place of retirement near Tlaxapuchicalco, on the volcano Catcitepetl *(Speaking Mountain)*, where he walked barefooted on agave leaves armed with prickles. We seem to behold one of those rishi, hermits of the Ganges, whose pious austerity † is celebrated in the Pouránas.

The reign of Quetzalcoatl was the golden age of the people of Anahuac. At that period, all animals, and even men, lived in peace; the earth brought forth, without culture, the most fruitful harvests; and the air was filled with a multitude of birds, which were admired for their song, and the beauty of their plumage. But this reign, like that of Saturn, and the happiness of the world, were not of long duration; the great spirit Tezcatlipoca, the Brahma of the nations of Anahuac, offered Quetzalcoatl a beverage, which, in rendering him immortal, inspired

* Codex anonymus, No. 3738, fol. 8.

† Schlegel über Sprache and Weisheit der Indier, p. 132.

him with a taste for travelling; and particularly with an irresistible desire of visiting a distant country, called by tradition Tlapallan*. The resemblance of this name to that of Huehuetlapallan, the country of the Toltecks, appears not to be accidental. But how can we conceive, that this white man, priest of Tula, should have taken his direction, as we shall presently find, to the south-east, towards the plains of Cholula, and thence to the eastern coasts of Mexico, in order to visit this northern country, whence his ancestors had issued in the five hundred and ninety-sixth year of our era?

Quetzalcoatl, in crossing the territory of Cholula, yielded to the intreaties of the inhabitants, who offered him the reins of government. He dwelt twenty years among them, taught them to cast metals, ordered fasts of eight days, and regulated the intercalations of the Tolteck year. He preached peace to men, and would permit no other offerings to the Divinity, than the first fruits of the harvest. From Cholula Quetzalcoatl passed on to the mouth of the river Goasacoalco, where he disappeared, after having declared to the Cholulans (Chololtecatles), that he would return in a short time to govern them again, and renew their happiness.

It was the posterity of this saint, whom the

* Clavigero Storia di Messico, tom. 2, p. 12.

unhappy Montezuma thought he recognized in the soldiers of Cortez. "We know by our books," said he, in his first interview with the Spanish General, "that myself, and those who "inhabit this country, are not natives, but "strangers, who came from a great distance. "We know also, that the chief, who led our "ancestors hither, returned for a certain time to "his primitive country, and thence came back "to seek those, who were here established. He "found them married to the women of this land, "having a numerous posterity, and living in "cities, which they had built. Our ancestors "hearkened not to their ancient master, and he "returned alone. We have always believed, that "his descendants would one day come to take pos-"session of this country. Since you arrive from "that region, where the Sun rises, and, as you "assure me, you have long known us, I cannot "doubt, but that the king, who sends you, is our "natural master*."

Another very remarkable tradition still exists among the Indians of Cholula, according to which the great pyramid was not originally destined to serve for the worship of Quetzalcoatl. After my return to Europe, on examining at Rome the Mexican manuscript in the Vatican library, I found, that this same tradition was

* First Letter of Cortez, § 21 and 29.

already recorded in a manuscript of Pedro de Los Rios, a Dominican monk, who, in 1566, copied on the very spot all the hieroglyphical paintings he could procure. "Before the great inundation, which took place four thousand eight hundred years after the creation of the World, the country of Anahuac was inhabited by giants (tzocuillixeque). All those who did not perish were transformed into fishes, save seven, who fled into caverns. When the waters subsided, one of these giants, Xelhua, surnamed the architect, went to Cholollan; where, as a memorial of the mountain Tlaloc, which had served for an asylum to himself and his six brethren, he built an artificial hill in form of a pyramid. He ordered bricks to be made in the province of Tlamanalco, at the foot of the Sierra of Cocotl, and to convey them to Cholula he placed a file of men, who passed them from hand to hand. The gods beheld with wrath this edifice, the top of which was to reach the clouds. Irritated at the daring attempt of Xelhua, they hurled fire on the pyramid. Numbers of the workmen perished; the work was discontinued, and the monument was afterwards dedicated to Quetzalcoatl, the god of the air."

This history reminds us of those ancient traditions of the East, which the Hebrews have recorded in their sacred books. The Cholulans preserved a stone, which, enveloped in a ball

of fire, had fallen from the clouds on the top of the pyramid. This aerolite had the figure of a toad. Rios, to prove the high antiquity of this fable of Xelhua, observes, that it was contained in a hymn, which the Cholulans sung at their festivals, dancing around the teocalli; and that this hymn began with the words *Tulanian hululaez*, which are words belonging to no dialect at present known in Mexico. In every part of the Globe, on the ridge of the Cordilleras, as well as in the isle of Samothrace in the Egean sea, fragments of primitive languages are preserved in religious rites.

The size of the platform of the pyramid of Cholula, on which I made a great number of astronomical observations, is four thousand two hundred square metres. From it the eye ranges over a magnificent prospect; Popocatepetl, Iztaccihuatl, the peak of Orizaba, and the Sierra de Tlascalla, famous for the tempests which gather around its summit. We view at the same time three mountains higher than Mount Blanc, two of which are still burning volcanoes. A small chapel, surrounded with cypress, and dedicated to the Virgin de los Remedios, has succeeded to the temple of the god of the air, or the Mexican Indra. An ecclesiastic of the Indian race celebrates mass every day on the top of this antique monument.

In the time of Cortez, Cholula was considered as a holy city. No where existed a greater number of teocallis, of priests, and religious orders, *(tlamacazque)*; no spot displayed greater magnificence in the celebration of public worship, or more austerity in its penances and fasts. Since the introduction of christianity among the Indians, the symbols of a new worship have not entirely effaced the remembrance of the old. The people assemble in crowds from distant quarters at the summit of the pyramid, to celebrate the festival of the Virgin. A mysterious dread, a religious awe, fills the soul of the Indian at the sight of this immense pile of bricks, covered with shrubs and perpetual verdure.

We have above remarked the great similarity of construction between the Mexican teocallis and the temple of Bel, or Belus, at Babylon. This analogy had already struck Mr. Zoega, though he had been able to procure but very incomplete descriptions of the group of the pyramids of Teotihuacan*. According to Herodotus, who visited Babylon, and saw the temple of Belus, this pyramidal monument had eight stories. It was a stadium high, and the breadth of its basis was equal to its height. The outer wall which surrounded it, the περιβολος, was two

* Zoega, de Origine Obeliscorum, p. 380.

stadia square. A common olympic stadium was one hundred and eighty three metres: the Egyptian stadium was only ninety eight*. The pyramid was built of brick and asphaltum. A temple (ναος) was erected on its top, and another at its basis. The first, according to Herodotus, was without statues; it contained only a table of gold, and a bed on which reposed a female chosen by the god Belus †. Diodorus Siculus, on the other hand, asserts, that the upper temple contained an altar, and three statues, to which, according to notions taken from the worship of the Greeks, he gave the names of Jupiter, Juno, and Rhea ‡. But neither these statues nor any part of the monument existed in the time of Diodorus and Strabo. In the Mexican teocallis, as in the temple of Belus, the lower *naos* was distinguished from the temple on the platform of the pyramid. The same distinction is clearly pointed out in the letters of Cortez, and in the history of the conquest written by Bernal Diaz, who dwelt several months in the palace of the king Axajacatl, and consequently opposite the teocalli of Huitzilopochtli.

* Vincent, Voyage of Nearchus, p. 56, (French translation).

† Herodotus, lib. 1, c. 181, 183.

‡ Diodorus Siculus, Ed. Wesselingiana, vol. 1, lib. 2, page 123.

No one of the ancient writers, neither Herodotus nor Strabo*, Diodorus nor Pausanias†, Arrian‡ nor Quintus Curtius§, asserts, that the temple of Belus was erected according to the four cardinal points, like the Egyptian and Mexican pyramids. Pliny observes only, that Belus was considered as the inventor of astronomy: *Inventor hic fuit sideralis scientiæ*‖. Diodorus relates, that the Babylonian temple served as an observatory to the Chaldeans. "It must be admitted," says he, "that this building was of an extraordinary height, and that here the Chaldeans made their observations on the stars, the rising and setting of which might be exactly perceived, on account of the elevation of the edifice." The Mexican priests, *(teopixqui)* made observations also on the stars from the summit of the teocallis; and announced to the people, by the sound of the horn, the hours of the night¶. These teocallis were built in the interval between the epocha of Mahomet and the reign of Ferdinand and Isabella; and we cannot

* Strabo, lib. 16, 211.

† Pausanias, lib. 8, ed. Xylandri, p. 509, n. 31.

‡ Arrianus, lib. 7, 17.

§ Quint. Curt. lib. 5, 1 et 37.

‖ Plin. Hist. nat. lib. vi, 30.

¶ Gama, Descripcion cronologica de la Piedra calendaria; Mexico 1792, p. 15.

observe without astonishment, that American edifices, the form of which is almost the same as that of one of the most ancient monuments on the banks of the Euphrates, belong to times so near our own.

When we consider in the same point of view the pyramidical monuments of Egypt, of Asia, and of the New Continent, we see, that, though their form is alike, their destination was altogether different. The group of pyramids at Geeza and at Sakhara in Egypt; the triangular pyramid of the Queen of the Scythians, Zarina, which was a stadium high, and three in circumference, and which was decorated with a colossal figure*; the fourteen Etruscan pyramids, which are said to have been enclosed in the labyrinth of the king Porsenna, at Clusium; were reared to serve as the sepulchres of the illustrious dead. Nothing is more natural to men, than to commemorate the spot where rest the ashes of those, whose memory they cherish; whether it be, as in the infancy of the race, by simple mounds of earth, or in later periods by the towering height of the tumulus. Those of the Chinese and of Thibet have only a few metres of elevation†. Farther to the west the dimensions increase:

* Diodorus Siculus, lib. 2, c. 34.

† Duhalde, Description of China, tom. 2, p. 126. Asiatic Researches, vol. ii, p. 314.

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the tumulus of the king Alyattes, father of Crœsus, in Lydia, was six stadia, and that of Ninus was more than ten stadia in diameter*. In the north of Europe the sepulchres of the Scandinavian king Gormus, and the queen Daneboda, covered with mounds of earth, are three hundred metres broad, and more than thirty high. We meet with these tumuli in both hemispheres; in Virginia, and in Canada, as well as in Peru, where numerous galleries, built with stone, and communicating with each other by shafts, fill up the interior of the *huacas*, or artificial hills. In Asia these rustic monuments have been decorated with the refinement of eastern luxury, while their primitive forms have been preserved. The tombs of Pergamus are cones of earth, raised on a circular wall, which seems to have been encased with marble †.

The teocallis, or Mexican pyramids, were at once temples and tombs. We have already observed, that the plain, on which were built the houses of the Sun and of the Moon at Teotihuaca, is called the *Path of the Dead*; but the essential and principal part of a teocalli was the chapel, the *naos*, at the top of the edifice. In

* Herodotus, lib. 1, c. 93. Ctesias, apud Diod. Sicul. lib. 2, c. 7.

† Choiseul Gouffier, Voyage Pittoresque de la Grèce, tom. 2, p. 27 to 31.

the infancy of civilization, high places were chosen by the people to offer sacrifices to the gods. The first altars, the first temples, were erected on mountains; and when these mountains were isolated, the worshippers delighted in the toil of shaping them into regular forms, cutting them by stories, and making stairs to reach the summit more easily. Both continents afford numerous examples of these hills divided into terraces, and supported by walls of brick or stone. The teocallis appear to me to be merely artificial hills, raised in the midst of a plain, and intended to serve as a basis to the altars. What more sublime and awful than a sacrifice, that is offered in the sight of an assembled nation! The pagods of Indostan have nothing in common with the Mexican temples. That of Tanjore, of which Mr. Daniell has given beautiful drawings*, is a tower with several stories, but the altar is not at the top of the monument.

The pyramid of Bel was at once the temple and tomb of this god. Strabo does not speak of this monument as a temple, he simply calls it the tomb of Belus. In Arcadia, the tumulus (χῶμα), which contained the ashes of Calisto, bore on its top a temple of Diana. Pausanias †

* Oriental Scenery, Pl. 17.

† Pausanias, lib. 8, c. 35.

describes it as a cone, made by the hands of man, and long covered with vegetation. This is a very remarkable monument, in which the temple is only an incidental decoration; it serves, if we may use the expression, as an intermediary step between the pyramids of Sakhara and the Mexican teocallis*.

* See my Political Essay on the Kingdom of New Spain, pages 169, 187, 289.

DETACHED MASS

OF THE

PYRAMID OF CHOLULA.

PLATE VIII.

THE pyramid of Cholula is so covered with vegetation, that it is extremely difficult to examine the structure of the great terraces. The Spanish historians of the sixteenth century, several of whom visited Mexico in the time of Montezuma, or a few years after his death, assert, that the whole edifice is built with bricks. In looking through the manuscripts of Pedro de Los Rios in the Vatican at Rome *, I found, as I have already stated, that the inhabitants of Cholula believed, according to an ancient tradition, that the bricks with which the teocalli was built were made in the province of Tlalmanalco, at the foot of mount Cocotl; and that prisoners,

* Cod. Vat. anonym. n. 3738, fol. 10.

placed in files, conveyed the bricks from hand to hand the space of several leagues, from Cocotl to Cholula. This tradition, which has the air of an Arabian tale, is found among the Peruvians. Those of Cuzco, who consider themselves as the inhabitants of a holy city, assert, that, when the Inca Tupac Yupanqui took possession of the kingdom of Quito (Quitu), he ordered immense masses of freestone to be taken from the quarries near Cuzco, in order to erect temples to the Sun in the newly conquered countries.

I was enabled to ascertain the internal structure of the pyramid of Cholula in two different places; near the summit, on the front opposite the volcano of Popocatepetl; and on the northern side, where the first terrace is cut through by the new road, which leads from Puebla to Mexico. In digging this road the end of the temple was detached from the rest of the mass. The eighth plate represents this detached part, in which the alternate layers of brick and clay are distinctly seen. The bricks were generally eight centimetres high, and forty in length; and seemed to me not to have been burnt, but only dried in the Sun; they may, however, have undergone a slight baking, and the humidity of the air may have rendered them friable. Perhaps the strata of clay, which separate those of brick, are wanting on the inside of the pyramid, and in the parts which support the enormous

weight of the whole mass. Mr. Zoega* erroneously imagined, that the teocalli of Cholula was a real *choma*, a mound of earth, cased externally with a layer of bricks. Gemelli, whom Robertson and other historians of the first rank accuse of inaccuracy more than he deserves, describes this pyramid under the name of a pyramid of earth †.

The construction of the teocalli, as we have already observed, reminds us of the most ancient monuments, that are recorded in the history of the civilization of mankind. The temple of Jupiter Belus, which seems to be recognized in the ancient mythology of the Hindoos under the name of Bali ‡, the pyramids of *Meidoum* and *Dahchour*, and several of the group of Sakhara, in Egypt, are also composed of immense heaps of bricks, the remains of which, after a lapse of thirty ages, are still in good preservation.

* De Obeliscis, page 380.

† Giro del Mondo, tom. vi, p. 380.

‡ Fra Paolino Di S. Bartholomeo, Viaggio alle Indie Orientali, p. 241.

MONUMENT OF XOCHICALCO.

PLATE IX.

THE singular monument, a fragment of which covered with sculpture is represented in this engraving, is considered in the country as a military monument. To the south east of the city of Cuernuvaca (the ancient Quauhnahuac), on the western declivity of the Cordillera of Anahuac, in that happy region, designated by the inhabitants under the name of *tierra templada* (temperate region) because it is the reign of perpetual spring, rises an isolated hill, which, according to the barometrical measurement of Mr. Alzate, is one hundred and seven metres high. This hill is on the west of the road leading from Cuernavaca to the village of Miacatlan. The Indians call it, in the Mexican or Azteck dialect, *Xochicalco*, or the *House of Flowers*. We shall see farther on, that the etymology of this name is as uncertain, as the epocha of the construction of the monument, which is attributed to the Toltecks. This nation is to the

Mexican antiquaries, what the Pelasgian colonists were to the Archæologists of Italy. Whatever is lost in the night of time is considered as the work of a people, among whom we think we discover the first germes of civilization.

The hill of Xochicalco is a mass of rocks, to which the hand of man has given a regular conic form, and which is divided into five stories, or terraces, each of which is covered with masonry. These terraces are nearly twenty metres in perpendicular height; but narrow towards the top, as in the teocallis, or Azteck pyramids, the summit of which was decorated with an altar. The whole of the terraces slope a little toward the south west, probably for the easier running off of the rains, which are very frequent in this region. The hill is surrounded by a deep and very broad ditch, so that the whole entrenchment is nearly four thousand metres in circumference. The magnitude of these dimensions ought not to surprise us: on the ridge of the Cordilleras of Peru, and on heights almost equal to that of the peak of Teneriffe, M. Bonpland and myself have seen monuments still more considerable. Lines of defence, and entrenchments of extraordinary length, are found in the plains of Canada. The whole of these American works resemble those, which are daily discovered in the eastern part of Asia; nations of the Mongul race, those especially that are most advanced in

civilization, have built walls, which separate whole provinces.

The summit of the hill of Xochicalco is an oblong platform, seventy two metres from north to south, and ninety six from east to west. This platform is encircled by a wall of hewn stone, more than two metres high, which served as a defence for the combatants. In the centre of this spacious military square, we find the remains of a pyramidical monument, which had five stories, the form of which resembled the teocallis we have already described. The first story only has been preserved, and it is that which is represented in the ninth plate. The owners of a sugar house near the spot demolished like barbarians the pyramid, and employed the stones to build their ovens. The Indians of Tetlama assert, that the five stories still existed in 1750; and from the dimensions of the first story we may conjecture, that the edifice was twenty metres high. Its faces are exactly fronting the four cardinal points. The base of the edifice is 20·7 metres in length, and 17·4 in breadth. It is very remarkable, that no vestige of a staircase can be discovered leading to the top of the pyramid, where formerly it is asserted there was a stone seat *(ximotlalli)*, ornamented with hieroglyphics.

Travellers, who examine attentively this work of the native tribes of America, cannot fail to be

greatly struck with the polish and the cut of the stones, all of which are parallelopipeds; the care with which they have been arranged, without cement between the joints; and the execution of the reliefs, with which the stones are decorated. Each figure occupies several stones; and, from the outlines not being interrupted by the joints of the stones, we may conjecture, that these reliefs were sculptured after the construction of the edifice was finished. Among the hieroglyphical ornaments of the pyramid of Xochicalco, we distinguish heads of crocodiles spouting water, and figures of men sitting crosslegged according to the custom of several nations of Asia. As the edifice is placed in a plain, elevated more than thirteen hundred metres above the level of the ocean, and since crocodiles haunt only the rivers which are near the coast; it seems strange, that the architect, instead of imitating plants and animals belonging to mountainous countries, should have employed, in these reliefs, with extreme industry, the gigantic productions of the torrid zone.

The ditch, with which the hill is surrounded, the covering of the terraces, the great number of subterraneous apartments dug in the rock on the northern side; the wall that defends the approach to the platform, concur all together to give the monument of Xochicalco a military aspect. The natives even to this day designate

the ruins of the pyramid by a name equivalent to that of a castle, or citadel. The great analogy between the form of this kind of citadel, and the teocallis, leads me to think, that the hill of Xochicalco was merely a fortified temple. The pyramid of Mexitli, or the great temple of Tenochtitlan, contained also an arsenal, and served during the siege as a fort, sometimes to the Mexicans, and at others to the Spaniards. We learn from Scripture, that, in the earliest times, the temples of Asia, such as that of Baal Berith at Shechem, in Canaan, were not only buildings consecrated to worship, but also entrenchments, in which the inhabitants of a city defended themselves against the attacks of an enemy. Nothing indeed is more natural to men, than to fortify the places, which contain the tutelary gods of the country. What more animating when the state is in danger, than to fly to the foot of their altars, and fight under their immediate protection? Among the nations whose temples were built like the pyramid of Belus, one of the most ancient in its figure, the structure of the edifice might serve the double purpose of worship and defence. In the Grecian temples, the wall which formed the peribolos alone afforded an asylum to the besieged.

The natives of the neighbouring village of Tetlama are in possession of a map, drawn before the arrival of the Spaniards, but to which

some names have been added since the conquest. In this map, at the place where the monument of Xochicalco is situate, is the figure of two warriors fighting with clubs, one of whom is called Xochicatli, and the other Xicatetli. We shall not here follow the Mexican antiquaries in their etymological discussions, to learn whether one of these warriors gave his name to the hill of Xochicalco; or whether the image of two combatants merely denotes a battle between two neighbouring nations; or finally, whether the denomination of the *House of Flowers* was given to this pyramidical monument, because the Toltecks, like the Peruvians, offered to the divinity only fruits, flowers, and incense. It was also near Xochicalco, that thirty years since an isolated stone was found, on which was represented in relief an eagle tearing a captive; an allusion, no doubt, to a victory obtained by the Aztecks over some neighbouring nation.

The drawing of the relief of the first story was copied from an engraving published by Mr. Alzate, at Mexico, in 1791. I had no opportunity myself of visiting this remarkable monument. When, arriving in New Spain by way of the South Sea, I went in the month of April, 1803, from Acapulco to Cuernavacca, I had never heard of the hill of Xochicalco; and I regret not having verified myself the descrip-

tion* given of this monument by Mr. Alzate, corresponding member of the Academy of Sciences at Paris. There being no scale to the ninth plate, it is necessary to observe, that the height of the figures sitting cross-legged is 1·03^{m}.

* Descripcion de las Antiquidades de Xochicalco, par Don Joseph Antonia Alzate y Ramirez; Mexico, 1791. Due Antichi Monumenti di Architettura Messicana illustrati da Pietro Marquez; Rome, 1804.

VOLCANO OF COTOPAXI.

PLATE X.

IN the description of the valley of Icononzo, I observed, that the enormous height of the elevated plains, which surround the lofty summits of the Cordilleras, somewhat weakens the impression, which these great masses leave on the mind of a traveller accustomed to the majestic scenes of the Alps and the Pyrenees. It is not so much the absolute height of mountains, as their aspect, figure, and groupings, that give a peculiar character to the landscape.

I have endeavoured to represent what may be called the physiognomy of mountains, in a series of drawings, some of which have already appeared in the geographical and physical Atlas belonging to my Essay on the Kingdom of New Spain. The comparison of the respective forms of mountains in the most distant parts of the Globe, like that of the forms of the vegetable tribes under different climates, appeared to me highly interesting to geology. Very few ma-

terials yet exist for so important a work. Without the aid of geodesical instruments, by which we measure very small angles, it is almost impossible to determine the outlines with sufficient exactness. While I was employed in these measurements in the southern hemisphere, on the ridge of the Cordilleras of the Andes, Mr. Osterwald, with the assistance of a celebrated astronomer, Mr. Tralles, was sketching, by a similar method, the chain of the Alps of Switzerland, as it appears when viewed from the banks of the lake of Neufchatel. This view, lately published, is so very exact, that, the distance of each summit being known, their relative height is found by employing in the calculation only the simple measure of the outlines of the drawing. Mr. Tralles made use of a repeating circle. The angles by which I determined the size of the different parts of the mountain were taken with a sextant by Ramsden, the limb of which marked with certainty six or eight seconds. By the repetition of this operation at the interval of distant periods, the accidental changes, which take place on the surface of the Globe, may some day be verified. In a country exposed to earthquakes, and overwhelmed by volcanoes, it is very difficult to determine, whether the mountains diminish, or whether by the ejection of ashes and scoriæ they insensibly augment. The simple

angles of elevation, taken at determinate stations, would solve this question more clearly than a complete trigonometrical survey, the result of which is affected by the errors, which may take place both in the measurement of the basis, and in that of the oblique angles.

When we consider the physiognomy of the mountains on each continent, we discover an analogy of form, which we could not have expected, if we reflect on the concurrence of the forces, which in the primitive world have acted tumultuously on the softened surface of our planet. The fire of volcanoes raises cones of ashes and pumice stones, where it penetrates through a crater; immense swellings, like domes of extraordinary magnitude, seem owing to the expansive force only of the elastic vapours; earthquakes have raised up strata full of sea-shels; and the basins, which now form circular vallies, or elevated plains surrounded by mountains, have been furrowed by the currents of the sea. Each country of the Globe has its peculiar physiognomy; but amidst these characteristic features, which bestow such a richness and variety on the face of nature, we are struck with a resemblance of form, founded on an identity of local causes and circumstances. When we sail amid the Canary islands, and observe the basaltic cones of Lanzerota, of Alegranza, and of Graciosa, we seem to view the group of the

Euganean mountains, or the trappean hills of Bohemia. The granites, the micaceous schists, the old sand-stones, the calcareous formations, which the mineralogists designate under the names of *formations of the Jura, of the High Alps*, or *transition limestone*, give a particular character to the outline of the great masses, and to the breaches found on the ridges of the Andes, the Pyrenees, and the Uralian mountains. The nature of the rocks has every where modified the external form of the mountains.

Cotopaxi, the summit of which is represented in the tenth plate, is the loftiest of those volcanoes of the Andes, which at recent epochs have undergone eruptions. Its absolute height is five thousand seven hundred and fifty-four metres (two thousand nine hundred and fifty-two toises); it is double that of Canigou; and consequently eight hundred metres higher than Vesuvius would be, were it placed on the top of the Peak of Teneriffe. Cotopaxi is also the most dreadful volcano of the kingdom of Quito, and its explosions the most frequent and disastrous. The mass of scoriæ, and the huge pieces of rock thrown out of this volcano, which are spread over the neighbouring valleys, covering a surface of several square leagues, would form, were they heaped together, a colossal mountain. In 1738, the flames of Cotopaxi rose nine hundred metres above the brink of the crater. In 1744, the

roarings of the volcano were heard as far as Honda, a town on the borders of the Magdalena, and at the distance of two hundred common leagues. On the 4th of April, 1768, the quantity of ashes ejected by the mouth of Cotopaxi was so great, that in the towns of Hambato and Tacunga day broke only at three in the afternoon, and the inhabitants were obliged to use lanterns in walking the streets. The explosion which took place in the month of January, 1803, was preceded by a dreadful phenomenon, the sudden melting of the snows that covered the mountain. For twenty years before, no smoke or vapour, that could be perceived, had issued from the crater; and in a single night the subterraneous fire became so active, that at sunrise the external walls of the cone, heated, no doubt, to a very considerable temperature, appeared naked, and of the dark colour, which is peculiar to vitrified scoriæ. At the port of Guayaquil, fifty-two leagues distant in a straight line from the crater, we heard, day and night, the noises of the volcano, like continued discharges of a battery; we distinguished these tremendous sounds even on the Pacific Ocean, to the south-west of the island of Puna.

Cotopaxi is situate to the south-east of the city of Quito, at the distance of twelve leagues, between the mountain of Ruminnavi; the summit of which, rugged with small separate rocks,

extends itself like a wall of enormous height; and Quelendanna, which enters the boundary of the eternal snows. It is in this part of the Andes, that a longitudinal valley separates the Cordilleras into two parallel chains. The bottom of this valley is three thousand metres above the level of the ocean, so that Chimborazo and Cotopaxi, seen from the elevated plains of Lican and Mulalo, appear no higher than the Col de Geant and du Cramont, measured by Saussure. As there is reason to suppose, that the proximity of the ocean contributes to feed the volcanic fire, the geologist is astonished to find, that the most active volcanoes in the kingdom of Quito, Cotopaxi, Tungurahua, and Sangay, belong to the eastern chain of the Andes, and consequently that which is farthest from the coasts. The whole of the peaks, except Rucu-Pichincha, which crown the Western Cordilleras, seem to be volcanoes extinguished for a long series of ages; but the mountain of which we give a drawing, and which is 2° 2′ distant from the nearest coasts, those of Esmeralda and the bay of San-Mateo, spouts out at different periods cataracts of fire, and spreads destruction over the surrounding plains.

The form of Cotopaxi is the most beautiful and regular of the colossal summits of the high Andes. It is a perfect cone, which, covered with an enormous layer of snow, shines with

dazzling splendor at the setting of the sun, and detaches itself in the most picturesque manner from the azure vault of Heaven. This covering of snow conceals from the eye of the observer even the smallest inequalities of the soil; no point of rock, no stony mass, penetrates this coating of ice, or breaks the regularity of the figure of the cone. The summit of Cotopaxi resembles the Sugar-loaf (Pan de azucar) which terminates the Peak of Teyde; but the height of its cone is six times the height of that of the great volcano of the Island of Teneriffe.

It is only near the brink of the crater we see ledges of rock, that are never covered with snow, and that look at a distance like stripes of the darkest hue; the great steepness of this part of the cone, and the crevices from which issue currents of heated air, are probably the causes of this phenomenon. The crater, like that of the Peak of Teneriffe, is surrounded by a small circular wall, which, examined with a good telescope, looks like a parapet. This is more distinctly seen on the southern declivity, when the beholder is placed either on the Lion mountain *(Puma-Urcu)*, or on the banks of the small lake of Yuracoche. I have added beneath the plate, in order to show this peculiar structure of the volcano, a view of the southern brink of the crater, such as I have sketched it near the limit of the perpetual snows (at the absolute

height of four thousand four hundred and eleven metres), at Suniguaicu, on the ridge of porphyritic mountains, which joins Cotopaxi to the Nevado de Quelendanna.

The conic point of the Peak of Teneriffe is of easy access, rising from the midst of a plain covered with pumice stones, and on which a few tufts of spartium supranubium vegetate. In scaling the volcano of Cotopaxi, it is extremely difficult to attain the inferior boundary of the perpetual snows, as we experienced in an excursion we made in the month of May, in the year 1802. The cone is surrounded by deep crevices, which at the moment of the eruptions bear down scoriæ, pumice stone, water, and blocks of ice, to Rio Napo, and Rio de los Alaques. After a near examination of the summit of Cotopaxi, we may venture to assert, that it would be impossible to reach the brink of the crater.

The greater the regularity in the form of the cone of this volcano, the more we are struck in finding, on the side to the south-east, a small mass of rock, half concealed under the snow, studded with points, and which the natives call the head of the Inca. The origin of this singular denomination is very uncertain. A popular tradition prevails in the country, that this isolated rock was heretofore a part of the top of Cotopaxi. The Indians relate, that the volcano, at

its first eruption, ejected far off a stony mass; which, like the cap of a dome, covered the enormous cavity, that contains the subterraneous fire. Some pretend, that this extraordinary catastrophe took place a short time after the invasion of the kingdom of Quito by the Inca Tupac Yupánqui; and that the rock, which is sketched in the tenth plate to the left of the volcano, is called the head of the Inca, because its fall was the ominous presage of the death of the conqueror. Others, still more credulous, affirm, that this mass of porphyry with basis of pitchstone* was displaced in an explosion, that happened at the very moment when the Inca Atahualpa was strangled by the Spaniards at Caxamarca. It seems indeed certain, that an eruption of Cotopaxi took place when the army of Pedro Alvarado marched from Puerto Viejo to the elevated plains of Quito; although Piedro de Cieca† and Garcilasso de la Vega‡ do not name the mountain, that threw out ashes, the sudden fall of which affrighted the Spaniards. But to adopt the opinion, that at this epocha, for the first time, the rock called the Cabeza del Inca took its present place, we must suppose, that Cotopaxi had no former eruptions; a sup-

* *Pechstein-porphyr*, Werner.

† Chronica del Peru, 1554, ch. 41, fol. 109.

‡ Comentarios Reales, lib. 2, ch. 2, vol. 2, p. 59.

position the more unfounded, as the walls of the palace of the Inca at Callo, built by Huayna Capac, contain stones of volcanic origin, thrown out by the mouth of Cotopaxi. We shall discuss in another place the important question, whether it be probable, that this volcano had already attained its present height, when the subterraneous fire issued from its summit; or whether a number of geological facts do not rather concur to prove, that the cone, like the Somma on Vesuvius, is composed of a great number of strata of lava heaped upon each other.

I sketched Cotopaxi and the Head of the Inca, to the west of the volcano, at the farm of Sienega, on the terrace of a beautiful country house belonging to our friend, the young Marquis of Maenza, who has lately inherited the title of Grandee, and that of Count of Punnelrostro. In order to distinguish, in these views of the tops of the Andes, the mountains that are volcanoes still burning from those that have no eruptions, I have traced a slight smoke above the crater of Cotopaxi, though I saw none at the time I made the sketch. The house of Sienega, built by a person who was intimately connected with M. de la Condamine, is placed on the vast plain, which extends between the two branches of the Cordilleras, from the hills of Chisinche and Tiopullo as far as Hambato. The colossal

volcano of Cotopaxi, the pyramidal peaks of Ilinisa, and the Nevado de Quelendana, open here at once on the spectator, and in dreadful proximity. This is one of the most majestic and most awful views I ever beheld in either hemisphere.

MEXICAN MONUMENT

In Relief,

FOUND AT OAXACA.

PLATE XI.

THIS relief, one of the most curious remains of Mexican sculpture, was found a few years ago, near the town of Oaxaca. The sketch was communicated to me by an eminent naturalist, Mr. Cervantes, professor of botany at Mexico, to whom we owe the knowledge of the new genera cheirostemon, guardiola, and many other plants, which will be published in the Flora of New Spain by Messrs. Sessé and Mocinno. The persons who sent this drawing to Mr. Cervantes assured him, that it was copied with the greatest care; and that the relief, sculptured on a blackish and very hard rock, was more than a metre in height.

They who have made a particular study of the Tolteck and Azteck monuments must be

struck both with the analogy and the contrasts between the relief of Oaxaca, and the figures which we find repeated in the hieroglyphical manuscripts, on the idols, and on the covering of several teocallis. Instead of those dwarfish men, who are scarcely five heads high, and who remind us of the most ancient Etruscan style, we distinguish in the relief represented in the eleventh plate a group of three figures, of slender form, and drawn too correctly for the infancy of the art. There is reason to think, that the Spanish painter, who copied this sculpture at Oaxaca, corrected the outlines in certain parts, perhaps unintentionally, particularly in sketching the hands and toes. But can we suppose, that he has changed the proportions of the whole figures? and is not this supposition devoid of probability, if we examine with what careful minuteness the forms of the heads, the eyes, and particularly the ornaments of the helmet, are traced? These ornaments, among which we distinguish feathers, ribands, and flowers; these noses, of extraordinary size, resemble those that are found in the Mexican paintings preserved at Rome, Veletri, and Berlin. It is only by comparing what was produced at the same epocha, and by people of the same origin, that we can form an exact idea of the style, which characterizes the different monuments; if we may be be allowed to apply the word style to the analo-

gies we discover among a multitude of fantastic and singular forms.

We might also ask, whether the relief of Oaxaca does not date from a period, when, after the first arrival of the Spaniards, the Indian sculptors were already acquainted with some European works of art. In discussing this question we should recollect, that, three or four years before Cortez made himself master of the country of Anahuac, and before religious missionaries hindered the natives from graving any other figures than those of saints, Hernandez de Cordova, Antonio Alaminos, and Grixalva, had visited the Mexican coasts, from the island of Cozumel, and False Cape, in the peninsula of Yucatan, as far as the mouth of the river of Panuco. These conquerors had general communications with the inhabitants, whom they found well clothed, dwelling in populous towns, and more civilized than any other people on the New Continent. It is probable, that, in these military expeditions, crosses, rosaries, and images, objects of veneration among the catholics, were left with the natives; and it is possible also, that some of these images may have passed successively from the coasts as far inland as the mountains of Oaxaca: but can we suppose, that the sight of a few figures correctly drawn could have determined the natives to abandon forms consecrated by the fashion of so

many ages? A Mexican sculptor might have faithfully copied the image of an Apostle no doubt; but in a country where, as in Hindostan and China, the natives adhered with the greatest perseverance to the manners, habits, and arts of their ancestors, would he have dared to represent a hero, or a Mexican divinity, under a new and foreign form? Besides, the historical pictures of the Mexican painters after the arrival of the Spaniards, several of which are found in the remains of the collection of Boturini at Mexico, evidently prove, that this influence of the European arts on the taste of the American nations, and on the correctness of their drawings, was extremely slow.

I thought it indispensable to state the doubts, that might be suggested respecting the origin of the relief of Oaxaca, which I have had engraved at Rome after the sketch that was communicated to me; but I am far from giving any decided opinion on so extraordinary a monument, which I had no opportunity of examining myself. The architecture of the palace of Mitla, the elegance of the *Grecques* and labyrinths, which decorate the walls, are proofs, that the civilization of the Zapoteck nations was superior to that of the inhabitants of the valley of Mexico. We may therefore be less surprised, that the relief in question should have been found at Oaxaca, the ancient Huaxyacac,

which was the capital of the country of the Zapotecks. If I might presume to offer my own private opinion, I should observe, that it appears to me more natural to attribute this monument to Americans, who had yet had no communication with the Whites; than to suppose, that some Spanish sculptor, who had followed the army of Cortez, should have amused himself with a work in the Mexican style in honour of a vanquished people. The natives of the north-west coast of America have never been deemed very civilized; yet they have executed drawings, the just proportions of which have been admired by English navigators*.

Whatever be the true state of the question, it seems certain, that the relief of Oaxaca represents a warrior returning from combat, and decked with the spoils of his enemies. Two slaves are placed at the feet of the conqueror. What is most striking in this composition are the noses of an enormous size, in the whole of six heads seen sideways. These noses are the essential characteristics of the monuments of Mexican sculpture. In the hieroglyphical pictures preserved at Vienna, Rome, and Veletri, or in the palace of the Viceroy at Mexico, the divinities, heroes, and even priests are all drawn with large aquiline noses, often pierced towards

* Dixon's Voyage, p. 272.

the point, and ornamented with the amphisbæna, or mysterious double-headed serpent. It is possible, that this extraordinary physiognomy might indicate a race of men very different from that which now inhabits these countries, whose noses are broad, flat, and of a moderate size; but it is also possible, that the Mexican people might have thought, with the prince of philosophers*, that there was something majestic and royal (βασιλικον) in a large nose, and might have considered it, in their reliefs and in their paintings, as the symbol of power and moral worth.

The pointed form of the heads is not less striking in the Mexican drawings, than the size of the noses. If we examine osteologically the skulls of the natives of America, we see, as I have elsewhere remarked, that there is no race on the Globe in which the frontal bone is more flattened, or which have less forehead†. This extraordinary flattening exists among people of the copper-coloured race, who have never been acquainted with the custom of producing artificial deformities, as is proved by the skulls of Mexican, Peruvian, and Azteck Indians, which M. Bonpland and myself brought to Europe,

* Plato, de Republica, lib. 5.

† Blumenbach, Decas quinta Craniorum, 1808, p. 14, tab. 46.

and several of which are deposited in the Museum of Natural History at Paris. The negroes prefer the thickest and most prominent lips; the Calmucks perceive the line of beauty in turned up noses. M. Cuvier* observes, that the Grecian artists, in the statues of heroes, raised the facial line from 85 to 100 degrees, or beyond the natural form. I am led to think, that the barbarous custom, among certain savage tribes in America, of squeezing the heads of children between two planks, arises from the idea, that beauty consists in this extraordinary compression of the frontal bone, by which nature has characterized the American race. It is no doubt from following this standard of beauty, that even the Azteck people, who never disfigured the heads of their children, have represented their heroes and principal divinities with heads much flatter than any of the Caribs I saw on the lower Orinoco.

The figure of the warrior in the relief of Oaxaca presents a very extraordinary mixture of costumes. The ornaments of his headdress, which has the shape of a helmet; those of the standard *(signum)*, which he holds in the left hand, and on which we see a bird, as on the standard of Ocotelolco; are found in all the Azteck paintings. The vest with long and

* Leçons d'Anatomie comparée, t. 2, p. 6.

narrow sleeves resembles the garment, which the Mexicans name ichcahuepilli; but the net, which covers the shoulders, is an ornament no longer to be met with among the Indians. Below the girdle is the spotted skin of a jaguar, with its tail. It is related by the Spanish historians, that the Mexican warriors, in order to appear more terrible in combat, wore enormous wooden helmets in the form of a tyger's head, the jaws of which were armed with the teeth of this animal. Two skulls, no doubt those of vanquished enemies, are tied to the girdle of the conqueror. His feet are covered with a kind of buskin, which reminds us of the σκελεαι, or *caligæ*, of the Greeks and Romans.

The slaves, represented sitting cross-legged at the feet of the conqueror, are very remarkable both for their attitudes and their nudity. That on the left is like the figure of those saints, which we frequently see in Hindoo paintings, and which the navigator Roblet found on the north-west coast of America, among the hieroglyphical paintings of the natives of Cox's channel*. It would be easy to trace, in this relief, the Phrygian cap and the apron (περίζωμα) of the Egyptian statues, were we to follow the steps of a learned writer†, who, led away by the

* Marchand's Voyage, vol. 1, p. 312.

† Court de Gibelin.

warmth of his imagination, thought he had discovered on the New Continent Carthaginian inscriptions and Phœnician monuments *.

* See Archæologia, or Miscellaneous Tracts relating to Antiquity; published by the Antiquaries of London, vol. 8, p. 290.

GENEALOGY

OF THE

PRINCES OF AZCAPOZALCO.

PLATE XII.

Two fragments of hieroglyphical paintings, both posterior to the arrival of the Spaniards on the coasts of Anahuac, are engraved on this plate. The originals, from which these drawings are copied, belong to the Azteck manuscripts, which I brought from New Spain, and which are deposited in the royal library at Berlin. The plate, from the manner in which it is engraved, is a perfect imitation, not only of the drawing, but of the colour of the Mexican paper; and reminds us of the curious envelope of a mummy, that was preserved for some time at Strasbourg, in a private collection, and now forms a part of the great and valuable collections of the Institute of Egypt at Paris.

The paper, which was used for the hieroglyphical paintings of the Azteck people, has a

great resemblance to the Egyptian paper, made with the fibres of the reed *(cyperus papyrus)*. The plant, which was employed in Mexico for the fabrication of paper, is known in our gardens under the name of aloes. It is the *pite* (agave Americana), called *metl*, or *maguey*, by the people of the Azteck race. The mode of making this paper was very similar to that employed in the South Sea islands with the bark of the *paper mulberry tree, (broussonetia papyrifera)*. I have seen pieces three metres long and two broad. The agave is cultivated at present not for paper-making, but for preparing with its juice, at the unfolding of the stalk and flowers, the intoxicating liquor called *octli*, or *pulque:* for the pite or nictl may be used as a substitute at the same time for the hemp of Asia, the paper reed of Egypt, and the vine of Europe.

The painting, a copy of which is at the bottom of the twelfth plate, is five decimetres long and three broad. It is well preserved, the colours are vivid, and the agave paper yellowed by time is of a very fine and equal texture. It appears that this fragment of hieroglyphical writing, which I purchased at Mexico, at the sale of Mr. Gama's collection, was formerly a part of the museum of the chevalier Boturini Benaducci. This Milanese traveller had crossed the seas with no other view, than to study on the spot the

history of the native tribes of America; but in traversing the country to examine its monuments, and make researches into its antiquities, he had the misfortune to excite the suspicion of the Spanish government. After having been deprived of all the fruits of his labours, he was sent in 1736, as a state-prisoner, to Madrid. The King of Spain declared him innocent, but this declaration did not restore to him his property; and his collections, the catalogue of which Boturini published at the end of his Essay on the Ancient History of New-Spain, printed at Madrid, lay buried in the archives of the Vice-royalty at Mexico. These valuable relics of the culture of the Aztecks were preserved with so little care, that there scarcely exists at present an eighth part of the hieroglyphical manuscripts taken from the Italian traveller.

They who, before Boturini, were in possession of the genealogical painting, which we now publish, have added to it explanatory notes, sometimes in Mexican, and sometimes in the Spanish language. We see by these notes, that the family, whose genealogy is represented in the drawing, is that of the lords (*tlatoanis*) of Azcapozalco. The small territory of these princes, to which the Tepanecks gave the pompous name of kingdom, was situated in the valley of Mexico, near the western bank of the lake of Tezcuco, to the north of the river Escapuzalco. Torquemada

asserts, that these princes, jealous of the antiquity of their nobility, carried back their origin as far as the first age of our era. They were neither of the Mexican nor Azteck race; they considered themselves as descendants of the Acolhuan kings, who had governed the country of Anahuac before the arrival of the Aztecks, by whom the princes of Azcapozalco were made tributaries in the eleventh *calli* of the Mexican era, which corresponds to the year 1425 of the Christian.

The genealogical painting, which we publish, appears to contain twenty-four generations, indicated by as many heads placed one above another. We must not be surprised at never seeing more than one son; since among the poorest Indians, that are tributary, every inheritance descends to the eldest son *. The genealogy begins with a prince named Tixlpitzin, whom we must not confound with Tecpaltzin, the chief of the Aztecks, in their first migration from Aztlan; or with Topiltzin, the last king of the Toltecks: but we shall perhaps wonder at not finding, instead of the name of Tixlpitzin, that of Acolhuatzin, first king of Azcapozalco, of the family of the Citins, who, according to the tradition of the natives, reigned

* Gomara, Hist. de la Conquista de Mexico; 1553, f. 121.

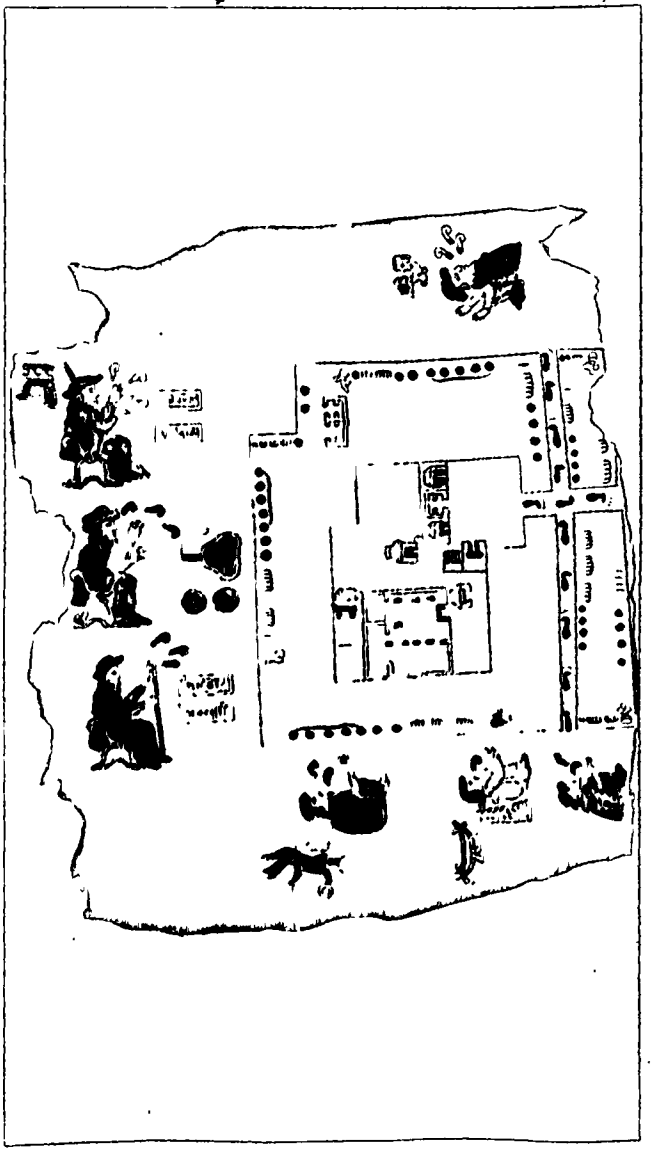
in a very distant country, north of Mexico. Near the fourteenth head is written the name of Vitznahuatl. If this prince were the same person with a king of Huexotla, whom the Mexican historians name also Vitznahuatl, and who lived about the year 1430, the genealogy of the family of Azcapozalco would go back to the year 1010 of our era, in reckoning only thirty years for each generation. But how then can we explain the ten following generations, as the drawing appears to have been made towards the end of the sixteenth century? Neither shall I decide why the year 1565 is marked between the names of the two princes, Anahuacatzin and Quauhtemotzin. We know, that the last of these names is that of the unfortunate Azteck king, whom Gomara falsely names Quahutimoc; and who, by order of Cortez, was hung up by the feet in 1521, as is proved by a very valuable hieroglyphical history, preserved in the Convent of San Felipe Neri, at Mexico *. But how could this king, nephew of Montezuma, figure in the family of the lords or tlatoanis of Azcapozalco?

It is certain, that, when the last of these princes ordered the genealogical painting of his ancestors to be composed, his father and grandfather were still living. This circumstance is

* See my Political Essay on New-Spain, p. 185.

clearly indicated by the small *tongues* placed at some distance from the mouth. A dead man, say the natives, is reduced to eternal silence: according to them, to live, is to speak; and, as we shall see presently, to speak much is a mark of power and nobility. These figures of tongues are also met with in the Mexican picture of the Deluge, which Gemelli published from a manuscript at Siguenza; in which we see men born dumb, who disperse themselves to repeople the Earth; and a bird, that distributes among them thirty-three different tongues. In the same manner a volcano, on account of the subterraneous noise heard sometimes in its neighbourhood, is figured by the Mexicans as a cone with several tongues hovering over its top: a volcano is called *the mountain that speaks.*

It is remarkable enough, that the Mexican painter should have given only to the three persons, who were living in his time, the diadem *(copilli)* which is a sign of sovereignty. We meet with this same headdress, but without the knot which reaches towards the back, in the figures of the kings of the Azteck dynasty, published by the Abbé Clavigero. The last branch of the lords of Azcapozalco is represented sitting on an Indian chair, with his feet at liberty: dead kings, on the contrary, are figured not only without tongues, but with their feet wrapped up in the royal cloak *(xiuhtilmatli)* which gives



A Sanscrit in Hieroglyphics.

Pub.d by Longman Hurst Rees Orme & Co. 1st Jan. 1811

these images a great resemblance to Egyptian mummies. It is almost superfluous in this place to notice the general observation, that, in all the Mexican paintings, the objects tied to a head by means of a thread indicate, to those aquainted with the language of the natives, the names of the persons drawn by the artist. The natives pronounce these names, when they see the hieroglyphic. Chimalpopoca signifies a buckler that smokes; Acamapitzin, a hand that holds reeds. Thus, to indicate the names of these two kings, predecessors of Montezuma, the Mexicans painted a buckler and a fist tied by a thread to two heads ornamented with a royal fillet. I have remarked, that, in the pictures made after the conquest, the valiant Pedro Alvarado was drawn with two keys placed behind the neck, in allusion, no doubt, to the keys of St. Peter, whose images were every where seen by the people in the Christian churches. I do not understand the meaning of the marks of feet, in the genealogical picture, behind the heads. In other Azteck paintings, this hieroglyphic indicates roads, migrations, and sometimes the direction of a movement.

A Law-suit in Hieroglyphical Writing.

Amidst the enormous quantity of paintings found among the Mexican nations by the first

conquerors, a very considerable number was destined to serve as evidence in litigious causes. The fragment added to the genealogy of the lords of Azcapozalco is an example of this kind. It is a paper of a law-suit respecting the possession of an Indian farm. Under the dynasty of the Azteck kings, the profession of a lawyer was unknown in Mexico. The contending parties appeared in person to plead their cause, either before the judge of the district, called *teuctli ;* or before the high courts of justice, called *tlacatecatl* or *cihuacohuatl.* As the sentence was not immediately pronounced after hearing the parties, each of the disputants was interested in leaving with the judges a hieroglyphical painting, to remind them of the principal object of the dispute. When the king presided in the assembly of the judges, which took place every twenty, and in certain cases every fourscore days, these law papers were placed before the monarch. In criminal causes, the picture represented the person accused, not only at the moment when the crime was committed, but also in the different circumstances of his life preceding this action. The king, in pronouncing the sentence of death, made with the point of a dart a scratch across the head of the culprit represented in the picture.

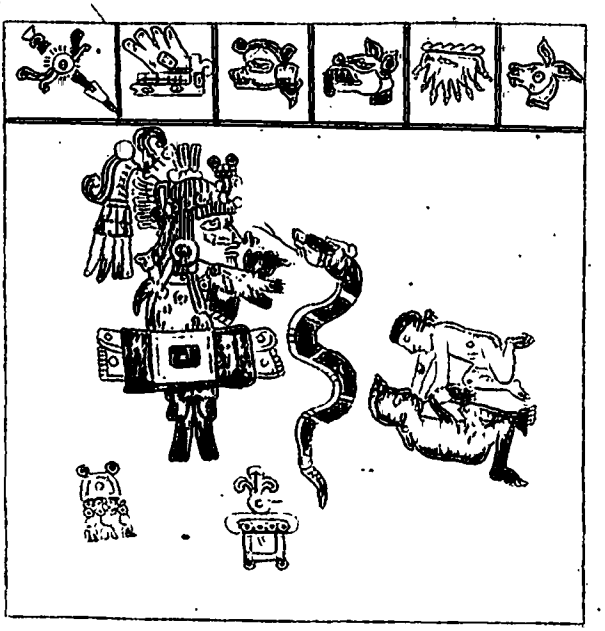
The use of these paintings in law-suits was continued in the Spanish tribunals long after the conquest. The natives, unable to address the

judges except through an interpreter, considered the employment of hieroglyphics as doubly necessary. They were presented before the several courts of justice in New-Spain (the *Real Audiencia*, the *Sala del Crimen*, and the *Juzgado de Indios*) as late as the beginning of the seventeenth century. When the Emperor Charles V. with a view to encourage the culture of the arts and sciences in these distant regions, founded, in 1553, the University of Mexico, three professorships were established; one for teaching the Azteck language, another for the Otomite, and a third for the explanation of hieroglyphical paintings. It was for a long time deemed indispensable to have attorneys, pleaders, and judges, who were able to read the titles, the genealogical paintings, the ancient code of the laws, and the list of taxes (*tributos*) which each feudatory was obliged to pay his lord. Two professors of the Indian language still exist at Mexico; but the chair destined for the study of the Azteck antiquities has been suppressed. The use of paintings is entirely lost; not because the knowledge of the Spanish language has increased among the natives, but because, from the present organization of the tribunals, it is found more useful to apply to lawyers to plead the cause of the people before the judges.

The painting represented on the twelfth plate seems to indicate a law-suit between some natives

and Spaniards. The affair in litigation is a farm, the plan of which is traced in orthographical projection. We see the high-road pointed out by the marks of the feet; the houses sketched in profile; an Indian, whose name indicates a bow; and Spanish judges sitting in chairs with the laws before them.

The Spaniard, placed immediately above the Indian, was probably called Aquaverde; the hieroglyphic of water, painted green, being figured behind his head. The tongues are very unequally divided in this picture. Every thing portrays the state of a vanquished country: the native scarcely dares defend his cause, while the strangers with long beards talk much and loud, as the descendants of a conquering people.



Aztech hieroglyphical MS. in the Vatican Library.

Pub.d by Longman, Hurst, Rees, Orme & Brown, August, 1819.

AN AZTECK HIEROGLYPHICAL MANUSCRIPT

PRESERVED IN THE

Library of the Vatican.

PLATE XIII.

THE Mexican paintings, a very small number of which has reached our times, excite a double interest, both from the light they throw on the mythology and history of the first inhabitants of America, and the apparent connexion with the hieroglyphical writing of certain nations of the Old Continent. We shall bring together in this work whatever can afford information with respect to the communication which at the most distant periods seems to have taken place between groups of nations separated by deserts, by mountains, or by seas; and shall here mark the result of our investigations on the hieroglyphical paintings of the Americans.

Characters are found in Ethiopia, which have an astonishing resemblance with those of the

ancient Sanscrit, and particularly with the inscriptions in the caves of Canara, the construction of which preceded all the known periods of Indian history*. The arts appear to have flourished at Meroe, and at Axoum, one of the most ancient cities of Ethiopia, before Egypt rose from a state of barbarism. A celebrated writer, deeply versed in the history of India, Sir William Jones†, believed, that he had traced the same people in the Ethiopians of Meroe, the first Egyptians, and the Hindoos. Yet it is almost certain, that the Abyssinians, whom we must not confound with the autochthones of Ethiopia, were an Arabian tribe; and, according to the observation of M. Langles, the same hamyaritic characters, which we discover in the east of Africa, still decorated, in the fourteenth century of the vulgar era, the gates of the city of Samarcand. Some connexion therefore undoubtedly existed between Habesch, or ancient Ethiopia, and the elevated plain of central Asia.

A long struggle between two religious sects, the Brahmans and the Bouddhists, terminated by the emigration of the Chamans to Thibet, Mongolia, China, and Japan. If tribes of the

* Notes, by M. Langles, to Norden's Travels, vol. 3, p. 299, 349.

† Asiatic Researches, vol. 3, p. 5.

Tartar race have passed over to the north-west coast of America; and thence to the south and the east, towards the banks of Gila, and those of the Missouri, as etymological* researches seem to indicate; we should be less surprised at finding, among the semi-barbarous nations of the new continent, idols and monuments of architecture, a hieroglyphical writing, and exact knowledge of the duration of the year, and traditions respecting the first state of the world, recalling to our minds the sciences, the arts, and the religious opinions of the Asiatic nations.

In the study of the history of mankind, as in that of the immensity of languages spread over the face of the Globe, it would be losing ourselves in a labyrinth of conjectures, were we to assign a common origin to so many races, and so many different tongues. The roots of the Sanscrit found in the Persian tongue, the great number of roots of the Persian, and even of the Pahlavi, which we discover in the tongues of Germannic origin †, give us no right to consider the Sanscrit, the Pahlavi, or the ancient language of the Medes, the Persian, and the German, as derived from one and the same

* Vater ueber Amerika's Bevolkerung, p. 155, 169.

† Adelung's Mithridates, Th. 1, p. 277, Schlegel, ueber Sprache and Weisheit der Inder, p. 7.

source. It would no doubt be absurd to suppose the migration of Egyptian colonies whereever pyramidical monuments and symbolical paintings are found; but how can we avoid being struck with the traces of resemblance offered by the vast picture of manners, of arts, of language, and traditions, which exist at present among nations at the most remote distance from each other? Why should we hesitate to point out, wherever they occur, the analogies of construction in languages, of style in monuments, and of fictions in cosmogonies, although we may be unable to decide what were the secret causes of these resemblances, while no historical fact carries us back to the epocha of the communications, which existed between the inhabitants of different climates?

In fixing our attention on the graphical means which the natives employed to express their ideas, we find real hieroglyphics, sometimes curiologic, sometimes tropical, such as those, the use of which appears to have passed from Ethiopia into Egypt; symbolic characters composed of numerous keys, destined to speak rather to the eyes than the ear, and expressing whole words, like the Chinese; or syllabical characters, like those of the Mantchou Tartars, in which the vowels are combined in one figure with the consonants, but which may also be restored into simple letters; finally, real

alphabets, which offer the highest degree of perfection in the analysis of sounds, and of which some, for instance the Corean, according to the ingenious observation of M. Langles*, seem still to indicate the transition from hieroglyphics to alphabetical writing.

In the immense extent of the new continent, we see nations which have reached a certain degree of civilization; we observe forms of government, and institutions, which could only have been the effect of a long struggle between the prince and the people, the priesthood and the magistracy; and we find languages, some of which, such as the Greenland, the Cora, the Tamanac, the Totonac, and the Quichua†, display a richness of grammatical forms, which we trace nowhere in the old continent, except at Congo, and among the Biscayans, who were the remains of the ancient Cantabrians: but amid these marks of civilization, and this progressive perfection of language, it is remarkable, that no native people of America had attained that analysis of sounds, which leads to the most admirable, we might say the most miraculous of all inventions, an alphabet.

We perceive that the use of hieroglyphical

* Norden's Travels, Langles' edition, vol. 3, p. 296.

† Archiv fuer Ethnographie, B. 1, s. 345. Vater s. 206.

paintings was common to the Toltecks, the Tlascaltecks, the Aztecks, and several other tribes, which, since the seventh century of our era, appear successively on the elevated plain of Anahuac: but we nowhere find alphabetic characters; and we are led to think, that the progressive perfection of symbolic signs, and the facility with which objects are painted, had prevented the introduction of letters. We may cite, in support of this opinion, the example of the Chinese, who during thousands of years have contented themselves with four-score thousand characters, composed of two hundred and fourteen keys, or radical hieroglyphics: but do we not discover among the Egyptians the simultaneous use of an alphabet, and hieroglyphic writing, of which we have undoubted proof in the valuable rolls of papyrus found in the swathings of several mummies, and represented in M. Denon's Picturesque Atlas*?

Kalm† relates, in his Travels in America, that Mr. Verandrier had discovered, in 1746, in the savannahs of Canada, nine hundred leagues west of Montreal, a stone tablet fixed in a sculptured pillar, and on which were strokes that were taken for a Tartarian inscription. Several Jesuits at Quebec assured the Swedish traveller,

* Denon's Voyage en Egypt, Pl. 136 et 137.

† Kalm's Reise, B. III, p. 416.

that they had examined this tablet, which the Chevalier Beauharnois, then governor of Canada, had sent to M. de Maurepas in France. We cannot but deeply regret having no farther knowledge of a monument, so interesting to the history of man. But were there any persons residing at Quebec capable of judging of the character of an alphabet? and if this pretended inscription had been really recognized in France as a Tartarian inscription, is it probable, that an enlightened minister, a protector of the arts, would not have ordered it to be published?

The Anglo-American antiquaries have made known an inscription, which is supposed to be Phœnician, and which is engraved on the rocks of Dighton, in Narraganset bay, near the banks of Taunton river; twelve leagues south of Boston. Drawings of this inscription have been repeatedly published from the end of the 17th century down to the present time by Danforth, Mather, Greenwood, and Sewell; but so dissimilar, that it is difficult to recognize them as copies of the same original. The natives who inhabited these countries, at the time of the first European settlements, preserved an ancient tradition, according to which, strangers in wooden houses had sailed up Taunton river, formerly called Assoonet. These strangers, after having conquered the red men, had en-

graved marks in the rock, which is now covered by the waters of the river. Count de Gebelin does not hesitate, with the learned Dr. Stiles, to regard these marks as a Carthaginian inscription. He says with that enthusiasm which is natural to him, but which is highly injurious in discussions of this kind, that this inscription comes happily at the moment from the new world, to confirm his ideas on the origin of nations; and that it is clearly demonstrated to be a Phœnician monument, a picture which, in the foreground, represents an alliance between the American people and the foreign nation, coming by the winds of the north from a rich and industrious country.

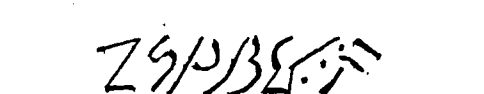
I have carefully examined the four drawings of the celebrated stone of Taunton river, which Mr. Lort * published in London in the Memoirs of the Antiquarian Society. Far from recognizing a symmetrical arrangement of simple letters and syllabic characters, I discover a drawing scarcely traced, like those that have been found on the rocks of Norway †, and in almost all the countries inhabited by the Scandinavian nations. In this sketch we distinguish, from the form of the heads, five hu-

* Account of an ancient Inscription, by Mr. Lort, Archæologia, vol. 6, p. 290.

† Suhm, Samlinger til ten Danske Historie, B. 2, p. 215.

man figures, surrounding an animal with horns, much higher in the fore than the hinder part of the body.

In the voyage made by M. Bonpland and myself to ascertain the communication between the rivers Orinoco and Amazon, we were told of an inscription, which it was asserted was found in the chain of granitic mountains, that, in the seventh degree of latitude, extends from the Indian village of Uruana, or Urbana, as far as the western banks of the Caura. A missionary, Ramon Bueno, a Franciscan monk, having accidentally entered a cavern formed by the separation of some ledges of rocks, beheld in the middle of the cave a large block of granite, on which he saw what he believed to be characters formed into various groups, and ranged on the same line. Unfortunately, the difficult circumstances, in which we were placed on our return from Rio Negro to St. Thomas de la Guayana, did not permit us to verify personally this observation. The missionary gave me a copy of part of these characters, of which the following is an engraving.



Some resemblance to the Phœnician alphabet

may be discovered in these characters; but I much doubt whether the good monk, who seemed to be but little interested about this pretended inscription, had copied it very carefully. It is somewhat remarkable, that out of seven characters there were none several times repeated; I have inserted them merely as worthy of engaging the attention of the learned, who may hereafter visit the forests of Guyana.

It is also remarkable, that in this savage and desert country, where P. Bueno found letters engraven in granite, are a great number of rocks, which at considerable heights are covered with figures of animals, representations of the sun, the moon, and the stars, and other hieroglyphical signs. The natives relate, that their ancestors, in the time of the *great waters*, came in canoes to the top of these mountains: and that the stones were then in so plastic a state, that men could trace marks on them with their fingers. This tradition indicates a tribe in a different state of civilization from that of the people by which it was preceded, discovering an absolute ignorance of the use of the chisel, and every other metallic tool.

From the whole of these facts it results, that there exists no certain proof of the knowledge of an alphabet among the Americans. In researches of this kind we cannot be too careful not to confound what may be the effect of

chance, or idle amusement, with letters or syllabic characters. Mr. Truter * relates, that in the southern extremity of Africa, among the Betjuanas, he saw children busy in tracing on a rock, with some sharp instrument, characters, which bore the most perfect resemblance with the P and the M of the Roman alphabet; notwithstanding which, these rude tribes were perfectly ignorant of writing.

This want of letters observed in the new continent, at the time of its second discovery by Christopher Columbus, leads to the idea, that the tribes of the Tartar or Mongul race, which we may suppose to have passed from the east of Asia to America, were not in possession of alphabetical writing; or what is less probable, that, having relapsed into barbarism under the influence of a climate less favorable to the display of the understanding, they had lost this wonderful art, known only to a very small number of individuals. We shall not here examine the question, whether the Devanagari alphabet is of remote antiquity on the banks of the Indus and the Ganges; or whether, as Strabo † asserts from Megasthenes, the Hindoos were ignorant of writing before the conquests of Alexander. Farther to the east and the north in the region

* Bertuch, Geogr. Ephem. B. 12, s. 67.

† Strabo, lib. 15, p. 1035—1044.

of monosyllabic languages, as in that of the Tartarian, Samoiede, Ostiack, and Kamtschadale tongues, the use of letters, wherever it is at present found, was introduced very late. It seems indeed probable, that it was the Christian sect of Nestorians, who communicated the Stranghelo alphabet to the Oighours and the Mantchou Tartars; an alphabet, which in the northern regions of Asia is still more recent, than the Runic characters in the north of Europe. We need not, therefore, suppose the communications between eastern Asia and America to have been of very remote antiquity, in order to comprehend why this latter part of the world had not been instructed in an art, which for a long series of ages was unknown except in Egypt, in the Phœnician and Grecian colonies, and in the small space lying between the Mediterranean, the Oxus, and the Persian gulf.

When we examine the history of those nations among which the use of letters is unknown, we find almost every where, in both hemispheres, that men have attempted to paint the objects which strike their imagination, to represent things by indicating a part for the whole, to compose pictures by grouping figures in symbolical sketches, and thus to perpetuate the memory of certain remarkable facts. The Delaware Indian, in scouring the woods, carves

strokes on the bark of the trees, to mark the number of men and women he has killed of the enemy: the conventional sign, which indicates the skin stripped from the head of a woman, differs by a simple stroke only from that which characterizes the scalp of a man. Were we to call hieroglyphic every painting of ideas by things, there is not, as Mr. Zoega * has well remarked, a corner of the Globe, in which we should not find hieroglyphical writing; but this same learned person, who has deeply studied the Mexican paintings, observes also, that we must not confound hieroglyphical writing with the representation of an event, with pictures in which the objects are in the state of action with one another.

The first missionaries who visited America, Valades and Acosta †, have already called the Azteck paintings a writing similar to that of the Egyptians. If Kircher, Warburton, and other learned men, have since contested the propriety of this expression, it is because they have not distinguished the *paintings of a mixed kind*, in which real hieroglyphics, sometimes curiological, sometimes tropical, are added to the natural representation of an action, from *simple hieroglyphics*

* Zoega, p. 525—534.

† Rhetorica Christiana, auctore Didaco Valades; Romæ, 1579, P. 2, c. 27, p. 93. Acosta, Lib. 6, c. 7.

phical writing, such as is found, not on the *pyramidion*, but on the great faces of the obelisks. The famous inscription of Thebes, cited by Plutarch, and by Clement of Alexandria *, the only one, the explanation of which has reached us, expressed by the hieroglyphics of a child, an old man, a vulture, a fish, and a hippopotamus, the following sentence: "You who are born, and who are to die, know, that the Eternal hates impudence." A Mexican, to express the same idea, would have represented the great spirit, Teotl, chastising a criminal; certain characters placed above two heads, would have been sufficient to indicate the age of the child, and that of the old man: he would have *individualized* the action, but the style of his hieroglyphical paintings would not have furnished him with the means of giving a general expression to the sentiment of hatred and vengeance.

According to the ideas which the ancients have transmitted to us of the hieroglyphical inscriptions of the Egyptians, it is very probable, that they might have been read, as we read Chinese books. The collections, which we improperly call Mexican manuscripts, contain a great number of paintings, which may be inter-

* Plut. de Iside: ed. Par. 1624, Vol. 2, p. 363, F. Clem. Alexand. Stromat. Vol. 5, c. 7, ed. Potter, Oxon, 1715, Vol. 2, p. 670, lin. 30.

preted or explained like the sculptures on the Trajan column; but we find only a very small number of characters susceptible of being read. The Azteck people had real simple hieroglyphics for water, earth, air, wind, day, night, the middle of the night, speech, motion; they had also for numbers, for the days and the months of the solar year. These signs, added to the painting of an event, marked in a very ingenious manner, whether the action passed during the day or the night; the age of the persons they wished to represent; whether they had been conversing, and who among them had spoken most. We even find among the Mexicans vestiges of that kind of hieroglyphics, which is called *phonetic*, and which indicates relations, not with things, but with the language spoken. Among semi-barbarous nations, the names of individuals, of cities, and mountains, have generally some allusion to objects that strike the senses, such as the form of plants and animals, fire, air, or earth. This circumstance has given the Azteck people the means of being able to write the names of cities, and those of their sovereigns. The verbal translation of Axajacatl, is *face of water*; that of Ilhuicamina, *arrow which pierces the sky*; thus to represent the kings Moteuczoma Ilhuicamina and Axajacatl, the painter united the hieroglyphics of water and the sky to the figure of a head and of an arrow. The names of the cities

of Macuilxochitl, Quauhtinchan, and Tehuilojoccan, signify, *five flowers, house of the eagle,* and *place of mirrors:* to indicate these three cities, they painted a flower placed on five points, a house from which issued the head of an eagle, and a mirror of obsidian. In this manner the union of several simple hieroglyphics indicated compound names, and by signs which spoke at the same time to the eye and the ear: the characters which designated towns and provinces were often drawn also from the productions of the soil, or the occupations of the inhabitants.

From the whole of these researches it follows, that the Mexican paintings, which have been preserved to our times, offer a great resemblance not with the hieroglyphical writings of the Egyptians, but with the rolls of papyrus found in the swathings of the mummies; which we may also consider as paintings of a mixed kind, because they unite symbolical and isolated characters with the representation of an action. We recognize, in these rolls of papyrus, initiations, sacrifices, allusions to the state of the soul after death, tributes paid to conquerors, the beneficent effects of the inundations of the Nile, and the labours of agriculture. Among a great number of figures represented in action, or in connexion with each other, we observe real hieroglyphics, those isolated characters which belonged to writing; and it is not only on the

papyri, and the swathings of mummies, but also on the obelisks, that we find traces of this mixed kind, which joins painting with hieroglyphical writing. The lower part and the point of Egyptian obelisks present in general a group of two figures, which are in a state of action with respect to each other, and which ought not to be confounded with the isolated characters of symbolical writing.

When we compare the Mexican paintings with the hieroglyphics, that decorated the temples, the obelisks, and perhaps even the pyramids of Egypt; and reflect on the progressive steps, which the human mind appears to have followed in the invention of graphic means fitted to express ideas; we see, that the nations of America were very distant from that perfection which the Egyptians had obtained. The Aztecks were indeed but little acquainted with simple hieroglyphics; they could represent the elements, and the relations of time and of place; but it is only by a great number of these characters, susceptible of being employed separately, that the painting of ideas becomes easy, and approximates to writing. We find among the Aztecks the germes of phonetic characters: they knew how to write names, by uniting certain signs which are associated with sounds: this contrivance might have led them to the beautiful discovery of giving an alphabetic form to their simple hieroglyphics;

but ages would have elapsed, before these nations of mountaineers, who adhered to their manners and customs with the same invincible obstinacy as the Chinese, the Japanese, and the Hindoos, could have raised themselves to the decomposition of words, the analysis of sounds, the invention of an alphabet!

Notwithstanding the extreme imperfection of the hieroglyphical writing of the Mexicans, their paintings were good substitutes for books, manuscripts, and alphabetic characters. In the time of Montezuma, thousands of persons were employed in painting; either forming new compositions, or copying pictures which already existed. The facility with which they made paper of the leaves of maguey, or pite (the agave), no doubt greatly contributed to render the use of painting so frequent. The paper reed (cyperus papyrus) of the Old Continent grows only in moist and temperate places; the pite, on the contrary, flourishes equally in the valleys, and on the loftiest mountains; it vegetates in the warmest regions of the Globe, and on elevated plains, where the thermometer descends to the freezing point. The Mexican manuscripts (*codices Mexicani*), that have been preserved, are some of them painted on deer skins, others on cotton, or paper of maguey. It is very probable, that among the Americans, as formerly among the Greeks, and other people of the Old World,

the use of skins, tanned and prepared, preceded that of paper: the Toltecks, at least, seem already to have employed hieroglyphical painting at that remotë era, when they inhabited the northern provinces, the climate of which is unfit for the cultivation of the agavé.

Among the Mexican people, the figures and symbolic characters were not traced on separate leaves. Whatever was the substance employed for manuscripts, they were seldom destined to form rolls; but were almost always folded in zigzag, in a particular manner, like the mounts of our fans. Two tablets of light wood were pasted at the ends, one at top, the other at bottom, so that, before the painting was unfolded, the manuscript had the most perfect resemblance with our bound books. By this arrangement, on opening a Mexican manuscript as we open our books, we can see only half of the characters at one time, those which are painted on the same side of the skin, or paper of maguey: to examine the whole of the pages, if the different folds of a band, which is often twelve or fifteen metres in length, can be called pages, we must extend the whole manscript first from the left to the right, and then from the right to the left. In this respect the Mexican paintings are perfectly similar to the Siamese manuscripts, preserved in the public library at Paris, which are also folded in zigzag.

The volumes, which the first missionaries of New Spain improperly called Mexican books, contained notions on a great number of very different subjects; they consisted of historical annals of the Mexican empire, rituals indicating the month and the day on which sacrifices were to be made to particular divinities, cosmogonical and astrological representations, papers relating to lawsuits, documents respecting the divisions of property in a district, lists of tributes payable at certain periods of the year, genealogical tables, according to which inheritances or the rule of succession in families was regulated, calendars showing the intercalations of the civil year and religious year, and paintings indicating the pains and penalties, which the judges were to inflict for crimes. My travels in different parts of America and Europe procured me the advantage of examining a greater number of Mexican manuscripts, than Zoega, Clavigero, Gama, the Abbé Hervas, the ingenious author of the *Lettere Americane*, Count Rinaldo Carli, and other learned persons, who, since Boturini, have written on these monuments of the ancient civilization of America. In the valuable collection preserved in the palace of the Viceroy at Mexico, I saw fragments of paintings relative to each of the subjects I have just enumerated.

We cannot avoid being struck with the great resemblance, which we observe between the

ROYAL ASIATIC SOCIETY

Mexican manuscripts preserved at Veletri, at Rome, at Bologna, at Vienna, and at Mexico; they seem at first sight to be copies of each other; they are all extremely incorrect in the outlines, but we find a scrupulous attention to the details, and great strength in the colouring which is placed so as to produce the most striking contrasts. The figures are in general dwarfish with respect to the body, like those of the Etruscan reliefs: but in correctness of drawing they are far beneath the most imperfect paintings of the Hindoos, the Chinese, the Japanese, or the people of Thibet. We see in the Mexican paintings heads of an enormous size, a body extremely short, and feet which, from the length of the toes, look like the claws of a bird. The heads are always drawn in profile, though the eye is placed as if the figure presented a full view. All this denotes the infancy of the art; but we must not forget, that people who express their ideas by paintings, and who are compelled by their state of society to make frequent use of mixed hieroglyphical writing, attach as little importance to correct painting, as the literati of Europe to a fine handwriting in their manuscripts.

It cannot be denied, that the Mexican people belong to a race of men, who, like several Tartar and Mongul hordes are extremely fond of imitating the form of objects. Every where in

New Spain, as well as in Quito and Peru, we find Indians, who know how to paint and carve; they succeed in servilely copying whatever they behold, and they have learnt, since the arrival of the Europeans, to give correctness to their outlines; but nothing indicates their being penetrated with that feeling of the beautiful, without which painting and sculpture cannot rise above the rank of mechanical arts. In this, and in many other respects, the inhabitants of the New World resemble the whole of the tribes of the East of Asia.

We may conceive also how the frequent use of mixed hieroglyphical paintings must contribute to spoil the taste of a nation, thus familiarized to the aspect of the most hideous figures, and of forms the most remote from correctness of proportion. To indicate a king, who, in such a year, conquered a neighbouring nation, the Egyptian, in the perfection of his writing, ranged in the same line a small number of isolated hieroglyphics, which expressed the whole series of the ideas he wished to represent; and these characters consisted for the most part of the figures of inanimate objects: the Mexican, on the contrary, to express the same thing, was obliged to paint a group of two persons, a king, armed, overthrowing a warrior wearing the arms of the conquered city. But in order to abridge the labour of these historical paintings, they begun soon to paint only what was absolutely

indispensable to recognize the objects. Why give arms to a figure represented in an attitude in which no use is made of them? Moreover, the principal forms, those by which a divinity, a temple, a sacrifice, were represented, must have been early fixed. It would have become extremely difficult to comprehend these paintings, if every artist could have capriciously varied the representation of objects, which it was so often necessary to portray. Hence it follows, that the civilization of the Mexicans might have been considerably advanced, without their being tempted to abandon the incorrect forms, to which they had been habituated for ages. A warlike nation, living on mountains, robust, but extremely ill-favoured according to the European principles of beauty, degraded by despotism, accustomed to the ceremonies of a sanguinary worship, is but little disposed to raise itself to the cultivation of the fine arts; the habit of painting instead of writing, the daily view of so many hideous and disproportioned figures, the obligation of preserving the same forms without change, these various circumstances must have contributed to perpetuate a bad taste among the Mexicans.

We seek in vain on the elevated plain of central Asia, or farther to the north and the east, for nations who have made use of this hieroglyphical painting, which has been practised in the

country of Anahuac ever since the end of the seventh century. The Kamtschatdales, the Tongooses, and other tribes of Siberia, described by Strahlenberg, paint figures which represent historical facts. Under every zone, as we have already observed, we find nations more or less addicted to this kind of painting; but there is a wide distance between a plate covered with certain characters, and those Mexican manuscripts, which are all composed according to a uniform system, and which may be considered as the annals of the empire. We are ignorant whether this system of hieroglyphic painting was invented in the New Continent, or whether it was owing to the emigration of some Tartar tribe acquainted with the exact duration of the year, and whose civilization was as ancient as that of the Oighours of the elevated plain of Turfan. If we do not find in the Old Continent any nation, that has made so extensive a use of painting as the Mexicans, it is because we discover neither in Europe nor in Asia a civilization so much advanced, without the knowledge of an alphabet, or certain characters that serve as a substitute, such as the characters of the Chinese and the Coreans. Before the introduction of hieroglyphical painting, the nations of Anahuac made use of those knots, and threads of various colours, which the Peruvians call *quippus*, and which are found not only among the Canadians,

but in very remote times among the Chinese. Boturini was fortunate enough to procure specimens of real Mexican quippus, or *nepohualtzitzin*, found in the country of the Tlascaltecks. In the great migrations of the nations, those of America transported themselves from north to south, as the Iberians, the Celts, and the Pelasgi flowed from east to west. Perhaps the ancient inhabitants of Peru had already passed over the elevated plain of Mexico: in fact, Ulloa, who was well acquainted with the style of Peruvian architecture, was struck with the great resemblance certain old edifices of Western Louisiana bore, in the distribution of the doors and niches, to the *tamboes* built by the Incas; and it is not less singular, according to the traditions collected at Lican, the ancient capital of the kingdom of Quito, that the quippus were known to the Puruays long before they were subdued by the descendants of Manco-Capac.

The use of writing and of hieroglyphics superseded in Mexico, as well as in China, that of knots, or the nepohualtzitzin. This change was effected about the year 648 of our era. A northern, but very polished race, the Toltecks, appears in the mountains of Anahuac, on the east of the gulf of California; declares itself expelled from a country lying to the north-west of the Rio Gila, and called Huehuetlapallan; it brings with it paintings, indicating year by year the

events of its migration; and it professes to have quitted this country, the situation of which is altogether unknown to us, in the year 544, at the same period when the total ruin of the dynasty of the Tsin had occasioned great commotions among the nations in the east of Asia. This circumstance is very remarkable: moreover, the names, which the Toltecks bestowed on the cities they built, were those of the cities of the northern country, which they had been compelled to abandon; from this circumstance the origin* of the Toltecks, the Cirimecks, the Acolhuans, and the Aztecks, of those four nations who spoke the same language, and who entered successively, and by the same road into Mexico, will be known, if we ever discover in the north of America or Asia a people acquainted with the names of Huehuetlapallan, Aztlan, Teocolhuacan, Amaquemecan, Tehuajo, and Copalla.

As far as the parallel of fifty-three leagues, the temperature of the north-west coast of America is milder than that of the eastern coasts; we might be led to think, therefore, that civilization had anciently made some progress in this climate, and even in higher latitudes. Even in our own times we perceive, that in the fifty-seventh degree, in Cox's Channel, and Norfolk Sound,

* Clavigero, Storia di Messico, tom. 1, p. 126; tom. 4, p. 29 and 46.

called by Marchand the gulf of Tchinkitané, the natives have a decided taste for hieroglyphical paintings on wood. I have examined in another part of my works*, whether it is probable, that these industrious nations, of a generally mild and affable disposition, are Mexican emigrants, who sought refuge toward the north, after the arrival of the Spaniards; or whether they are not rather the descendants of the Tolteck and Azteck tribes, who, at the time of the irruption of the nations of Aztlan, remained in these northern regions. From the happy coincidence of various circumstances, man raises himself to a certain degree of cultivation, even in climates the least favourable to the development of organized beings: near the polar circle, in Iceland, in the twelfth century, we know the Scandinavians cultivated literature and the arts with more success, than the inhabitants of Denmark and Prussia.

A few Tolteck tribes appear to have mixed with the nations, who formerly inhabited the country lying between the eastern bank of the Mississippi and the Atlantic ocean. The Iroquois and the Hurons made hieroglyphical paintings on wood, which bear a striking resemblance

* See my Essai Politique, vol. 1, p. 372; vol. 2, p. 507: Marchand, tom. 1, p. 259, 261, 299, 375.

with those of the Mexicans*; they indicated the names of the persons they meant to represent, by employing the same means, which we have already mentioned in the description of a genealogical painting. The natives of Virginia had paintings called *saghokok*, which represented in symbolical characters the events, that had taken place during the space of sixty years: these were great wheels divided by sixty spokes, or into as many equal parts. Lederer† relates having seen, in the Indian village of Pommacomek, one of these hieroglyphical cycles, in which the epocha of the arrival of the Whites on the coasts of Virginia was marked by the figure of a swan vomiting fire; to indicate at the same time the colour of the Europeans, their passage by water, and the destruction which their firearms had poured on the Red men.

At Mexico the use of painting and of paper of maguey was extended far beyond the limits of the empire of Montezuma, to the borders of the lake of Nicaragua, whither the Toltecks in their migrations had carried their language and their arts. In the kingdom of Guatimala, the inhabitants of Teochiapan had preserved traditions,

* Lafitau, vol. 2, p. 43, 225, 416. La Hontan, Voyage dans l'Amerique septentrionale, vol. 2, p. 193.

† Journal des Savans, 1681, p. 75.

that went back to the epocha of a great deluge; after which their ancestors, led by a chief called *Votan*, had come from a country lying toward the north. In the village of Teopixca, there still existed in the sixteenth century descendants of the family of Votan, or Vodan; for these two names are the same, the Toltecks and the Aztecks not having the four consonants *d, b, r, s*, in their language. They who have studied the history of the Scandinavian nations in the heroic times must be struck at finding in Mexico a name, which recalls that of Wodan or Odin, who reigned among the Scythians, and whose race, according to the very remarkable assertion of Bede*, "gave kings to a great number of nations."

If it be true, as many learned men have supposed, that these same Toltecks, whom pestilence, followed by a great drought, had driven from the elevated plain of Anahuac about the middle of the eleventh century of our era, reappeared in South America as founders of the empire of the Incas, why should not the Peruvians have abandoned their *quippus*, and adopted the hieroglyphical writing of the Toltecks? Almost at the same epocha, in the beginning of the twelfth century, a Greenland bishop had

* Beda, Hist. Eccles. lib. 1, c. 15. Francisco Nunnez de la Vega, Constitutiones Synodales, p. 74.

carried, not to the Continent of America, but to Newfoundland *(Vinland)*, Latin books, the same perhaps as the brothers Zeni found there in 1380*.

We are ignorant whether tribes of the Tolteck race penetrated into the southern hemisphere, not by the Cordilleras of Quito and Peru, but by following the plains which stretch to the east of the Andes, towards the banks of the Maranon. An extremely curious fact, with which I became acquainted during my abode at Lima, leads to this supposition.

Narcissus Gilbar, a franciscan, distinguished for his courage, and his love of inquiry, found, among some independent Indians, the Panoes, on the banks of the Ucayale, a little to the north of the mouth of the Sarayacu, bundles of paintings, which in their external appearance perfectly resembled our volumes in quarto. Each leaf was three decimetres long, and two broad; the covering of these collections was formed of several leaves of the palm tree, with a very thick parenchyma, glued together: pieces of tolerably fine cotton formed the leaves, which were fastened by threads of the agave. When Gilbar reached the dwellings of the Panoes, he found an old man seated at the foot of a palm-tree,

* Viaggio de Fratelli Zeni (Venezia, 1808), p. 67.

† Ibid.

and surrounded by several young persons, to whom he was explaining the contents of these books. The savages would not at first permit a white man to approach the teacher; and informed the missionary by means of Indians of Manoa, who alone understood the language of the Panoes, "that these paintings contained hidden things, which no stranger ought to know." With great difficulty N. Gilbar procured one of these collections, which he sent to Lima for the inspection of P, Cisneros, the learned compiler of a periodical journal *, which has been translated in Europe. Several persons of my acquaintance have seen this book of the Panoes, every page of which was covered with paintings. These were figures of men and of animals, and a great number of isolated characters, which were deemed hieroglyphical, arranged in lines, with admirable order and symmetry. The liveliness of the colors was particularly striking; but as no one at Lima had seen a fragment of Azteck manuscripts, it was impossible to judge of the identity of the style of paintings found at the distance of eight hundred leagues from each other.

P. Cisneros wished to deposit this book in the convent of the missions of Ocopa; but whether the person, to whom it was entrusted, lost it in the passage over the Cordilleras, or whether it

* El Mercurio Peruano.

was taken and sent clandestinely into Europe, it is certain, that it never reached the place of its first destination : every search made to regain so curious an object was fruitless, and the regret of not having copied these characters came too late. The missionary Narcissus Gilbar, with whom I was intimately acquainted at Lima, promised me to make use of every endeavour to procure me another collection of these paintings of the Panoes : he knows that several exist among them ; and that they say themselves, that these books were transmitted to them by *their fathers*. The explanation they give of these paintings seems founded on an ancient tradition, which is perpetuated in some families. The Indians of Manoa, whom P. Gilbar commissioned to make researches on the meaning of these characters, imagined, that they related to travels, and ancient wars with the neighbouring tribes.

The Panoes differ at present but very little from the other savages, who inhabit these damp and sultry forests : naked, living on the fruits of the plaintain, and the produce of their fishery, they are far removed from all knowledge of paintings, and from feeling the want of communicating their ideas by graphic signs. Like the greater part of the tribes planted on the banks of the spacious rivers of South America, they appear to have been but recent occupants of the soil

they now inhabit. Are they the scanty remnant of some civilized nation fallen into the savage state? or are they descendants of those same Toltecks, who carried the use of hieroglyphic paintings into New-Spain, and who, expelled by other nations, have disappeared from the borders of the lake Nicaragua? These are interesting questions for elucidating the history of man; and are connected with others, the importance of which has not hitherto been sufficiently felt.

Some granitic rocks, which rise on the savannahs of Guiana, between the Cassiquiare and the Conorichite, are covered with figures of tigers, crocodiles, and other characters, which may be regarded as symbolical. Similar figures are found four hundred leagues to the north and the west, on the banks of the Orinoco, near Encaramada and Caicara; on the borders of the river Cauca, near Timba, between Cali and Jelima; and even on the elevated plain of the Cordilleras, in the Paramo of Guanacas. The natives of these regions are unacquainted with the use of metallic tools; and all concur in asserting, that these characters already existed when their ancestors arrived in those countries. Is it to a single nation, trained to industry, and skilled in sculpture, such as the Toltecks, the Aztecks, and the tribes that emigrated from Aztlan, that these marks of remote civilization are owing? In what region

must we place the seat of this culture? Is it to the north of the river Gila, on the elevated plain of Mexico? or in the southern hemisphere, in those lofty plains of Tiahuanacu, which the Incas themselves found covered with ruins of majestic greatness, and which may be considered as the Himala and the Thibet of South America? These problems are not to be solved in the present state of our knowledge.

We have now examined the relations, that exist between the Mexican paintings and the hieroglyphics of the ancient world. We have endeavoured to throw some light on the origin and migrations of the nations that introduced into New-Spain the use of symbolic writing, and the fabrication of paper; what remains is to notice the manuscripts *(Codices Mexicani)*, that, since the sixteenth century, have been sent to Europe, and preserved in public and private libraries. We shall be astonished to find how rare are become these precious monuments of a nation, which in its progress toward civilization appears to have struggled with the same obstacles, that opposed the advancement of the arts among all the nations of the North, and even of the East of Asia.

From the researches I have made it appears, that there exist at present in Europe only six collections of Mexican paintings, those of the Escurial, Bologna, Veletri, Rome, Vienna, and

Berlin. The learned jesuit Fabrega, who is often cited in the works of Mr. Zoega, and whose manuscripts relating to the Azteck antiquities were communicated to me by the Chevalier Borgia, nephew to the Cardinal of that name, supposes, that the archives of Simancas in Spain contain also some of these hieroglyphical paintings, which Robertson has so aptly denominated *picture writings* *.

The collection preserved at the Escurial has been examined by Mr. Waddilove, chaplain to the English embassy at Madrid when Lord Grantham was ambassador. It has the form of a book in folio; which may lead us to suspect, that it is only a copy of a Mexican manuscript, for the originals I have examined are all of the size of volumes in quarto. The objects represented seem to prove, that the collection of the Escurial, like those of Italy and Vienna, are either astrological books, or real rituals, which point out the religious ceremonies prescribed for particular days of the month. At the bottom of each page is an explanation in Spanish, which has been added since the conquest.

The collection of Bologna is deposited in the library of the Institute of Sciences of that city. We are unacquainted with its origin; but we read on the first page, that this painting, which

* Robertson's History of America, 1802, vol. 3, p. 403.

is 326 centimetres (eleven Roman palms) in length, was ceded, the 26th of December, 1665, by Count Valerio Zani to the Marquis of Caspi. The characters, which are traced on a thick and ill prepared skin, seem in a great measure to allude to the form of the constellations, and to astrological notions. There exists an engraved copy of this *Codex Mexicanus* of Bologna, in the Museum of Cardinal Borgia, at Veletri.

The collection of Vienna, which is sixty-five pages, is become celebrated, since it fixed the attention of Dr. Robertson; who, in his classic work on the History of the New Continent, has published a few pages in outlines only, and without coloring. We read on the first page of this Mexican manuscript, that it was sent by King Emanuel of Portugal to Pope Clement the Seventh, and that it has since been in the hands of the Cardinals Hippolito de Medicis and Capuanus.

Lambeccius *, who has made very incorrect engravings of some figures of the *Codex Vindobonensis,* observes, that as King Emanuel was dead two years before the election of Pope Clement the Seventh, this manuscript could not have been given to this last Pontiff, but rather to Leo the Tenth, to whom the King of Portugal sent an

* Lambeccii Commentar. de Bibliotheca Cæsar. Vindobonensi, ed. 1776, p. 966.

embassy in 1513; but I ask how it was possible to have Mexican paintings in Europe in 1513, since Hernandez de Cordova did not discover the coasts of Yucatan till 1517, and Cortez landed at Vera Cruz only in 1519? Is it probable, that the Spaniards should have found Mexican paintings in the island of Cuba, when the inhabitants of that island, notwithstanding the short distance from False Cape to Cape St. Antonio, do not appear to have had any communication with the Mexicans? It is true, that, in the note added to the collection of Vienna, this collection is not called *Codex Mexicanus*, but *Codex Indiæ meridionalis*: nevertheless the perfect analogy between this manuscript and those at Veletri and Rome leaves no doubt with respect to their common origin. King Emanuel died in 1521; Clement the Seventh in 1534: it seems to me incredible, that before the first entry of the Spaniards into Tenochtitlan on the 8th of November, 1519, there should have been a Mexican manuscript at Rome. At whatever period it reached Italy, it is certain, that, after having passed from hand to hand, it was offered in 1677 to the Emperor Leopold by the Duke of Saxe-Eisenach.

We are altogether ignorant of the fate of the collection of Mexican paintings, which existed toward the end of the 17th century at

London, and which were published by Purchas. This manuscript was sent to the Emperor Charles the Fifth by the first Viceroy of Mexico, Antonio de Mendoza, Marquis of Mondejar: the vessel which transported this valuable object was taken by a French ship, and the collection fell into the hands of Andrew Thevet, geographer to the King of France, who had himself visited the new continent. After the death of this traveller, Hakluyt, who was chaplain to the English embassy at Paris, purchased the manuscript for twenty crowns; and from Paris it went to London, where Sir Walter Raleigh was desirous of publishing it. The expense of engraving the figures retarded the publication till 1625; when, in compliance with the wishes of the learned antiquary Spelman, Purchas inserted the whole of the *collection of Mendoza* in his collection of travels *. These same figures have been copied by Thevenot †, in his Relation of *divers Travels:* but this copy, as Abbé Clavigero ‡ has very justly observed, is full of faults; the events, for instance, which took place under the reign of the King Ahuizotl, are there indicated under the reign of Montezuma.

* Purchas's Pilgrims, vol. 3, p. 1065.

† Thevenot (1696), vol. 2, Pl. 4, p. 1—85.

‡ Clavigero, vol. 1, p. 23.

Some authors *, have asserted, that the original of the celebrated collection of Mendoza, was preserved in the royal library at Paris; but it seems certain, that for a century past this library has contained no Mexican manuscript. How should the collection purchased by Hakluyt, and carried to England, have been brought back to France? We know at present of no other Mexican paintings at Paris than some copies contained in a Spanish manuscript, which came from the library of Tellier, and of which we shall have occasion to speak hereafter. This book, highly interesting in other respects, is preserved in the superb collection of manuscripts in the public library at Paris. It resembles the *Codex anonymus* of the Vatican, N. 3738, which is the work of the monk Pedro de los Rios †. Kircher has copied a part of the engraving of Purchas ‡.

The collection of Mendoza throws light over the history, political state, and domestic life of the Mexicans. It is divided into three sections; which, like the skandhas of the Hindoo Puranas, treat of subjects altogether different. The first section gives the history of the Azteck dynasty,

* Warburton, Essay on Hieroglyphicks, vol. 1, p. 18. Papillon, Histoire de la Gravure en Bois, tom. 1, p. 364.

† See above the description of Pl. 7.

‡ Kircheri Œdipus, vol. 3, p. 32.

from the foundation of Tenochtitlan, in the year 1325 of our era, to the death of Montezuma the Second, properly called Monteuczoma Xocojotzin, in 1520; the second section is a list of the tributes, which each province and little town paid the Azteck sovereigns; the third and last section contains sketches of the domestic life and manners of the Azteck people. The viceroy Mendoza has added to each page of the collection an explanation in Mexican and Spanish, so that the whole forms a work very interesting to the historian. The figures, notwithstanding the incorrectness of the outlines, present several very singular sketches of manners. We see in them the education of children from their infancy, till they become members of society, either as husbandmen, manufacturers, warriors, or priests. The quantity of food suitable to every age, the punishment that ought to be inflicted on children of both sexes; every thing among the Mexicans was prescribed in the most minute detail, not by law, but by ancient customs, from which no deviation was permitted. Fettered by the yoke of arbitrary power, and the barbarism of civil institutions, without freedom of will in the most indifferent actions of domestic life, the whole nation was reared in a languid uniformity of customs and of superstitions. The same causes have produced similar effects in ancient Egypt, in India,

in China, in Mexico, and in Peru; wherever men were merely masses animated by a sameness of will; wherever laws, religion, and custom, have placed barriers to the progress of intellectual improvement and individual happiness.

In the paintings of the Mendoza collection we trace the ceremonies practised on the birth of a child. The midwife, invoking the god Ometeuctli, and the goddess Omecihualt, who reside in the abodes of the blest, sprinkled water on the forehead and the breast of the newborn infant; and after pronouncing different prayers *, in which water was considered as the symbol of the purification of the soul, the midwife bad the children draw near, who had been invited to give the child a name. In some provinces a fire was lighted at the same time, and the infant was seemingly made to pass through the flame, and undergo the double purification of fire and water. This ceremony reminds us of usages, the origin of which, in Asia, appears to be lost in the darkness of the remotest ages.

Other plates of the collection of Mendoza represent the punishments, often barbarous, inflicted by parents on their children, according to the greatness of the fault, and the age and

* Clavigero, vol. 2, p. 86.

sex of the offender. A mother exposes her daughter to the smoke of pimento (capsicum baccatum): a father pricks his son eight years old with agave leaves, which are terminated by thorns. The painting indicates in what cases the hand only of the child should be pricked, and in what other cases parents are permitted to extend this painful operation over the whole of the body. A priest, *teopixqui*, chastises a novice, by throwing burning coals on his head, because he has passed the night beyond the boundary of the temple. Another priest is represented as sitting in the attitude of observing the stars, to indicate the hour of midnight. We here perceive, in the Mexican painting, the hieroglyphic of midnight placed above the head of the priest, and a dotted line from the eye of the observer pointing towards a star*. We see also figures, which represent women spinning with a distaff, and weaving at a loom the warp of which is perpendicular; a goldsmith blowing a charcoal fire through a pipe; an old man of seventy, to whom the law allows the privilege of intoxication, as it did to a woman when she became a grandmother; a matchmaker, called *cihuatlanque*, who carries the young virgin on her back to the house of the bridegroom; and lastly the nuptial benedic-

* Thevenot, vol. 2, Pl. 4, fig. 49, 51, 55, 61.

tion, the ceremony of which consisted in the priest, or teopixqui, tying the skirt of the young man's cloak *(tilmatli)* to the young woman's robe *(huepilli)*. The Mendoza collection contains also several figures of Mexican temples, in which we clearly distinguish the pyramidal monument divided into steps, and the little chapel, the νεος, at the top. But the most complicated painting, as well as the most ingenious of this *Codex Mexicanus*, is that which represents a *tlatoani*, or governor of a province, strangled for revolting against his sovereign; for the same picture records the crime of the governor, the punishment of his whole family, and the vengeance exercised by his vassals against the state messengers, bearers of the order of the king of Tenochtitlan.

Notwithstanding the enormous quantity of paintings, which, considered as monuments of Mexican idolatry, were burnt at the beginning of the conquest, by order of the bishops and the first missionaries, Boturini *, whose misfortunes we have already deplored in the preceding pages, succeeded toward the midst of the last century in collecting near 500 of their hieroglyphical paintings. This collection, the finest and the most complete of those hitherto made, was dispersed like that of Siguenza; of which

* Boturini, Tableau General, p. 1—96.

some slight remnants were preserved, till the expulsion of the Jesuits, in the library of St. Peter and St. Paul at Mexico. A part of the paintings collected by Boturini was sent to Europe in a Spanish vessel, which was taken by an English privateer. It was never known whether these paintings reached England, or whether they were thrown into the sea as of no value. A well informed traveller has assured me, that a Codex Mexicanus is shown in a library at Oxford, which in the liveliness of its colours resembles that of Vienna; but Robertson, in the last edition of his history of America, says expressly, that no other monument of Mexican industry and civilization exists in England, beside a golden cup of Montezuma's, belonging to Lord Archer. How could this Oxford collection have remained unknown to the illustrious Scottish historian?

The greater part of the manuscripts of Boturini, those which were confiscated in New Spain, were torn, pillaged, and dispersed by persons, who were ignorant of the value of these objects. What exists at present, in the palace of the viceroy, composes only three packets, each seven decimetres square by five in height. They remained in one of the damp apartments of the ground floor with the archives of the government, which the viceroy, Count Revillagigedo removed, because the humidity mould-

cred the paper with alarming rapidity. We feel a sentiment of indignation on seeing the extreme negligence, with which these valuable remains were abandoned, which had cost so much care and labor, and which the unfortunate Boturini, fired with that enthusiasm, which is peculiar to enterprising men, calls in his Historical Essay "the only property which he possessed in the Indies, and which he would not change against all the gold and silver of the New World." I shall not here undertake to give a detail of the paintings preserved in the palace of the viceroyalty; but shall only observe, that there are some, which are six metres long and two broad, and which represent the migrations of the Aztecks from the Rio Gila to the valley of Tenochtitlan, the foundation of several cities, and wars with the neighbouring nations.

The library of the university of Mexico is no longer in possession of any original hieroglyphic paintings. I found only a few copies in outline without colours, and executed with little care. The richest and finest collection of this capital is that of P. Jose Antonio Pichardo, member of the congregation of San Felipe Neri. The house of this enlightened and studious person was to me what the house of Siguenza was to the traveller Gemelli. Pichardo has sacrificed his little fortune in collect-

ing Azteck paintings, and in copying those he was unable to purchase: his friend Gama, author of several astronomical memoirs, bequeathed him all the most valuable hieroglyphical manuscripts he possessed. In the new continent, as well as in every other country, private individuals, and those not the most opulent, become the collectors and preservers of objects, which are worthy the protection of governments.

In the kingdom of Guatimala, or in the interior of Mexico, I know of no persons animated with the same zeal as Alzate, Velasquez, and Gama. The hieroglyphic paintings are now so scarce in New Spain, that the greater part of the well informed men who reside there have never seen any; and among the remains of the collection of Boturini there is not a single manuscript so fine as the Codices Mexicani of Veletri and Rome. I have however no doubt, that several objects of importance to the study of history may be still found in the hands of the Indians, who inhabit the province of Mechuacan, the Intendancies of Mexico, Puebla, and Oaxaca, the peninsula of Yucatan, and the kingdom of Guatimala. In these countries the nations, who were emigrants from Aztlan, had reached a certain degree of civilization; and a traveller, who, understanding the Azteck, Tarasck and Maya languages, could obtain the confidence of the natives, might still collect, three cen-

turies after the conquest, and a hundred years after the journey of Boturini, a considerable number of historical Mexican paintings.

The Codex Mexicanus of the Borgian museum at Veletri is the finest of the Azteck manuscripts, that I have examined. We shall have occasion to speak of it hereafter, in the explanation of the 15th plate.

The collection preserved in the royal library at Berlin contains different Azteck paintings, which I purchased during my abode in New Spain. The twelfth plate gives two fragments of this collection: it contains the lists of tributes, genealogies, the history of the migrations of the Mexicans, and a calendar made at the beginning of the conquest, in which the simple hieroglyphics of the days are joined to figures of saints painted in the Azteck style.

The library of the Vatican at Rome possesses in the valuable collection of its manuscripts two Codices Mexicani, numbered 3738, and 3776, in the catalogue. These collections, as well as the manuscript of Veletri, were unknown to Dr. Robertson, when he enumerated the Mexican paintings preserved in the different libraries of Europe. Mercatus*, in his description of the obelisks of Rome, relates, that, toward the end of the 16th century, two col-

* Mercatus, degli Obelischi di Roma, C. 2, p. 96.

lections of original paintings existed in the Vatican. It would seem, that one of these collections is entirely lost, unless it is that which is seen in the library of the Institute of Bologna; the other was found in 1785 by the jesuit Fabrega, after fifteen years search.

The Codex Vaticanus, No. 3776, of which Acosta and Kircher have made mention*, is $7{\cdot}87^{m}$, or thirty-one palms and a half, long, and $0{\cdot}19^{m}$, or seven inches, square: its forty-eight foldings form ninety-six pages, or as many divisions marked on both sides of several doe skins glued together. Every page is subdivided into two compartments; but the whole manuscript contains only 176 of these compartments, because the first eight pages consist of the simple hieroglyphics of the days, arranged in parallel rows close to each other. The thirteenth plate of the Picturesque Atlas is an exact copy of one of these folds, or a page of the Codex Vaticanus. As all the pages are alike with respect to the general arrangement, this copy is sufficient to give an idea of the whole book.

The border of each fold is divided into twenty-six small compartments, which contain the simple hieroglyphics of the days. These hieroglyphics are twenty in number, which form periodical series. As the small cycles are of

* Zoega, De Orig. Obeliscor. p. 531.

thirteen days each, it follows, that the series of the hieroglyphics passes from one cycle to another. The whole of the Codex Vaticanus contains a hundred and seventy-six of these small cycles, or two thousand two hundred and ninety days. We shall not enter here into any detail on these subdivisions of time, proposing to give an explanation of the Mexican calendar, one of the most complicated, but also one of the most ingenious to be found in the history of astronomy. Every page exhibits, in the two subdivisions of which we have already spoken, two groups of mythological figures. We should lose ourselves in vain conjectures, were we to attempt interpreting these allegories; the manuscripts of Rome, Veletri, Bologna, and Vienna having none of those explanatory notes, which the viceroy Mendoza added to the manuscript published by Purchas. It were to be wished, that some government would publish at its own expense these remains of the ancient American civilization; for it is only by the comparison of several monuments, that we can succeed in discovering the meaning of these allegories, which are partly astronomical, and partly mystic. If of all the Greek and Roman antiquities there only remained a few cameos, or solitary coins, the most simple allusions would have escaped the sagacity of antiquaries. How much light has the inspec-

tion of bass-reliefs thrown over the study of medals!

Zoega, Fabrega, and others, who have studied the Mexican manuscripts in Italy, consider the *Codex Vaticanus*, like that of Veletri, as consisting of *tonalamatls*, or *ritual almanacks*; that is to say, as books which showed the people, for a space of several years, the divinities that presided over the small cycles of thirteen days, and who governed, during this space, the destinies of men; the religious duties, which ought to be practised; and especially the offerings, which were to be made to the idols.

The thirteenth plate of my Atlas, which is a copy of the ninety-sixth page of the Codex Vaticanus, represents on the left an adoration: the deity has on a helmet, the ornaments of which are very remarkable: he is seated on a small bench, called *icpalli*, before a temple, of which only the top, or small chapel placed on the upper part of the pyramid, is represented. The adoration consisted at Mexico, as well as in the East, in the ceremony of touching the ground with the right hand, and carrying the left to the mouth. In the drawing, No. 1, the homage is rendered by a genuflexion; the attitude of the figure, which prostrates itself before the temple, is found in several paintings of the Hindoos.

The group, No. 2, represents the celebrated *serpent woman*, Cihuacohuatl, called also Quilaztli, or Tonacacihua, *woman of our flesh:* she is the companion of Tonacateuctli. The Mexicans considered her as the mother of the human race; and, after the god of the *celestial Paradise*, Ometeuctli, she held the first rank among the divinities of Anahuac; we see her always represented with a great serpent. Other paintings exhibit to us a feather-headed snake, cut in pieces by the great spirit, Tezcatlipoca, or by the Sun personified, the god Tonatiuh. These allegories remind us of the ancient traditions of Asia. In the *woman and serpent* of the Aztecks we think we perceive the Eve of the Semetic nations: in the snake cut in pieces, the famous serpent *Kaliya*, or *Kalinaga*, conquered by Vishnu, when he took the form of Krishna. The Tonatiuh of the Mexicans appears also to be identical with the Krishna of the Hindoos, recorded in the Bhagavata Purana, and with the Mithras of the Persians. The most ancient traditions of nations go back to a state of things, when the Earth, covered with bogs, was inhabited by snakes and other animals of gigantic bulk: the beneficent luminary, by drying up the soil, delivered the Earth from these aquatic monsters.

Behind the serpent, who appears to be speaking to the goddess Cihuacohuatl, are two naked figures; they are of a different colour, and seem

to be in the attitude of contending with each other. We might be led to suppose, that the two vases, which we see at the bottom of the picture, one of which is overturned, is the cause of this contention. The serpent woman was considered at Mexico as the mother of two twin children; these naked figures are perhaps the children of Cihuacohuatl; they remind us of the Cain and Abel of Hebrew tradition. I doubt whether the difference of colour, which we observe in the two figures, indicates a difference of race, as in the Egyptian paintings found in the tombs of the kings at Thebes, and in the ornaments moulded in earth and stuck on the chests which contain the mummies at Sakhara. In carefully studying the historical hieroglyphics of the Mexicans, we seem to recognize, that the heads and hands of the figures are painted as by chance, sometimes yellow, sometimes blue, and at other times red.

The cosmogony of the Mexicans; their traditions of the mother of mankind, fallen from her first state of happiness and innocence; the idea of a great inundation, in which a single family escaped on a raft; the history of a pyramidical edifice raised by the pride of men, and destroyed by the anger of the gods; the ceremonies of ablution practised at the birth of children; those idols made with the flower of kneaded maize, and distributed in morsels to the people assem-

bled in the temples; the confession of sins made by the penitent; those religious associations, similar to our convents of men and women; the universal belief, that white men, with long beards and sanctity of manners, had changed the religion and political system of nations; all these circumstances had led the priests, who accompanied the Spanish army at the time of the conquest, to the belief, that at some very distant epocha christianity had been preached in the New Continent. Some learned Mexicans* have imagined, that the Apostle St. Thomas was the mysterious personage, high priest of Tula, whom the Cholulans acknowledged under the name of *Quetzalcoatl.* It is no way doubtful, that Nestorianism, mingled with the dogmata of the Bouddhistes and the Shamans†, spread through Mantchou Tartary into the north-east of Asia: we may therefore suppose, with some appearance of reason, that christian ideas have been communicated by the same means to the Mexican nations, especially to the inhabitants of that northern region, from which the Toltecks emigrated, and which we must consider as the *officina virorum* of the New World.

This supposition would be even more admissi-

* Siguenza, Opera ined. Eguiara, Bibl. Mexicana, p. 78.

† LANGLES, Rituel des Tartares Manchoux, p. 9 et 14. GEORGI *Alphab. tibetanum*, p. 298.

ble than the hypothesis, according to which the ancient traditions of the Hebrews and Christians passed into America with Scandinavian colonies, formed since the eleventh century on the coasts of Greenland, at Labrador, and perhaps even in the island of Newfoundland. These European colonists undoubtedly visited a part of the continent, which they called Drogeo; they were acquainted with the countries situate to the south-west, and inhabited by cannibals collected in populous cities; but, without examining in this place whether these cities were those of the provinces of Ichiaca and of Confachiqui, visited by Hernando de Soto, the conqueror of Florida, it may suffice to observe, that the religious ceremonies, the dogmas, and traditions, which struck the imagination of the first Spanish missionaries, were incontestably found at Mexico ever since the arrival of the Toltecks, and consequently three or four centuries before the navigation of the Scandinavians to the eastern coasts of the New Continent.

The ecclesiastics, who, following the armies of Cortez and Pizarro, penetrated into Mexico and Peru, were naturally inclined to exaggerate the analogies, which they fancied they had recognized between the cosmogony of the Aztecks, and the dogmas of the christian religion. Imbued with the Hebrew traditions, comprehending imperfectly the languages of the country,

and the meaning of the hieroglyphical paintings, they referred every thing to the system they had previously formed; like the Romans, who saw nothing among the Germans and Gauls but their own worship, and their own divinities. When we examine this question by the rules of the most rigid analysis, we find nothing among the Americans, which leads to the supposition, that the Asiatic nations migrated to the New Continent after the establishment of Christianity. I am very far from denying the possibility of these posterior communications; I am not ignorant *, that the Tchoutskis annually crossed Behring's Straits to make war on the inhabitants of the north-west coast of America; but I think I may affirm, from the knowledge we have acquired since the end of the last century of the sacred books of the Hindoos, that, in order to explain these resemblances of traditions, of which all the first missionaries speak, we have no need to recur to Western Asia, peopled by nations of the Semetic race; these same traditions, of high and venerable antiquity, are found both among the followers of Brahma, and among the Shamans of the eastern steppes of Tartary.

We will resume this important subject, either

* See my Essai Politique sur la Nouvelle-Espagne, vol. 2, p. 502, 8vo edition.

in treating of the Pastous*, an American nation, who eat nothing but vegetables, and who hold in abhorrence those who feed on flesh; or in speaking of the dogma of the metempsychosis received among the Tlascaltecks. We shall examine the Mexican tradition of the four suns, or four destructions of the world; as well as the traces of the *trimurti*, or trinity of the Hindoos, found in the religion of the Peruvians. Notwithstanding these striking analogies existing between the nations of the New Continent, and the Tartar tribes who have adopted the religion of Bouddah, I think I discover in the mythology of the Americans, in the style of their paintings, in their languages, and especially in their external conformation, the descendants of a race of men, which, early separated from the rest of mankind, has followed for a lengthened series of ages a peculiar road in the unfolding of its intellectual faculties, and in its tendency towards civilization.

* Garcilasso, Comentarios reales, tom. 1, p. 274.

COSTUMES

Delineated by the

MEXICAN PAINTERS IN THE TIME OF MONTEZUMA.

PLATE XIV.

THESE nine figures are taken from the *Codex Anonymus*, No. 3738, preserved among the manuscripts of the Vatican, which we have had occasion to cite several times. They are copies of pictures made by Mexican painters at the time of the first abode of Cortez at Tenochtitlan. P. Rios, in tracing the drawings, appears to have been more attentive to the particulars of the dresses, than to a faithful imitation of the outlines. On comparing the paintings of Plate fourteenth with those contained in the original manuscripts that have reached us, we see, that the figures copied by the Spanish monk are somewhat too much lengthened. These alterations of form are every where found, when the artists have not been sufficiently im-

bued with the idea of what importance it is to preserve the style, which characterizes the productions of the art among nations, who are more or less removed from civilization. What a difference in the truth of the outlines between the hieroglyphics published by Norden, and those we find in the work of Zoega on the obelisks, or in the description of the monuments of Egypt, with which the Institute of Cairo has lately enriched the sciences!

Nos. 1, 2, 3, 4, 5. Five Mexican warriors: the first three wear the dress called *ichcahuepilli*, a kind of cuirass of cotton, three centimetres thick, and covering the body from the neck to the waist. The soldiers of Cortez adopted this armour, which they named *escaupil*; a term in which we scarcely trace a word of the Azteck language. The ichcahuepilli was a perfect security against darts: but we must not confound it with the coats of mail of gold or copper, worn by the generals, called *lords of the eagles and the tigers*, *quauhtin* and *oocelo*, on account of their armour in the shape of masks. The bucklers, *chimalli*, Nos. 1 and 2, are of a very different form from those figured by Purchas and Lorenzana*. The shield No. 2 has an

* Purchas, Pilgrims, tom. 3, p. 1080, fig. L M; p. 1099, fig. C; pl. 4, fig. F. Lorenzana, Historia de Nueva Espana, p. 177, lam. 2, 8, et 9. Adornos militares.

appendage of cloth and feathers, which served to deaden the stroke of the dart; its form reminds us of the bucklers, which we find represented on several vases of Græcia Magna. The club, carried by the warrior, No. 3, was hollow, and contained stones, which were flung with prodigious force, as if they were thrown from a sling. The figure, No. 4, represents one of those intrepid soldiers, who went almost naked to war, with the body wrapped in a net of large meshes, which they threw over the head of the enemy, as the Roman *retiarii* in a contest with the *mirmillones*. No. 5 is a private soldier, who wears a cloth cloak, and a very narrow belt of skin, *maxtlatl*, around his waist.

The figure, No. 6, represents, as the *Codex Vaticanus* expressly indicates, the unfortunate Montezuma II, in a court dress, such as he wore in his palace. His robe, *tlachquauhjo*, is bordered with pearls; his hair turned back to the top of his head, and tied with a red riband, the military distinction of princes, and the most valiant commanders: his neck is ornamented with a collar of precious stones *(cozcapetlatl)*, but he wears neither the bracelets *(matemecatl)*, nor the boots *(cozehuatl)*, nor the ear-rings *(nacochtli)*, nor the ring set with emeralds suspended at the lower lip, which belonged to the grand dress of the emperor. The author of the *Codex Anonymus* says, " that the sovereign is figured

holding flowers in one hand, and a reed with a cylinder of odoriferous resin at the end, in the other." The vase which the emperor holds in his left hand has some resemblance to that which is seen in the hand of the intoxicated Indian, represented in the collection of Mendoza*. The Mexican painters generally represented kings and great nobles with naked feet, to indicate, that they were not born to make use of their legs, and that they constantly ought to be carried in palanquins, on the shoulders of their domestics †.

No. 7. An inhabitant of Tzapoteca, a province which comprised the south-east part of the intendancy of Oaxaca.

Nos. 8 and 9. Two women of Huasteca; the dress of the latter figure is no doubt Indian; but that of No. 8 very much resembles a European dress. Is it a woman of the country, to whom the soldiers of Cortez had given a neckerchief and a rosary? This is a question I shall not decide; but I observe, that the three cornered handkerchief is seen in several Mexican paintings before the arrival of the Spaniards; and that the pretended rosary, which is not terminated by a cross, may very well be one of those strings of beads, which existed from the most remote an-

* Purchas, p. 1117, fig. F.

† Codex Anon. n. 3738, fol. 60.

tiquity in all Eastern Asia, in Canada, Mexico, and Peru.

Though P. Rios, as we have already observed, appears to have somewhat lengthened the figures, the extremities, the form of the eyes, and that of the lips, the uppermost of which is constantly protruded beyond the lower, are proofs that he has copied faithfully.

AZTECK HIEROGLYPHICS,

FROM THE

Manuscript of Veletri.

PLATE XV.

Of all the Mexican manuscripts preserved in Italy, the Codex Borgianus of Veletri is the largest, and the most remarkable for the splendor and extreme variety of the colours. It is forty-four or forty-five palms (near eleven metres) long; and has thirty-eight folds, or seventy-six pages. It is a ritual and astrological almanack, which, from the distribution of the simple hieroglyphics of the days, and that of the groups of mythological figures, resembles altogether the *Codex Vaticanus*, a page of which is given in the thirteenth plate.

The manuscript of Veletri appears to have belonged to the family of Giustiniani. We know not by what unlucky chance it fell into the hands of the domestics of that house, who, ignorant of the value of such a collection of

monstrous figures, gave it as a plaything to their children. From their hands it was rescued by an enlightened lover of antiquities, Cardinal Borgia; but not before attempts had been made to burn some pages or folds of the deer skin, on which the paintings are delineated. Nothing indicates the antiquity of this manuscript, which perhaps is but an Azteck copy of an older book. The great freshness of the colours might lead us to suspect, that the *Codex Borgianus*, as well as that of the Vatican, does not go beyond the fourteenth century.

We cannot fix our eyes on these paintings, without feeling a crowd of interesting questions pressing on our minds. Did there exist at Mexico, in the lifetime of Cortez, hieroglyphic paintings made in the time of the Tolteck dynasty, and consequently in the seventh century of our era? Were there other copies at that period than those of the famous *divine book*, called *teoamoxtli*, compiled at Tula, in the year 660, by the astrologer Huematzin, and in which we find the history of Heaven and of Earth, a cosmogony, a description of the constellations, the division of time, the migrations of nations, mythology, and moral philosophy? Was this Mexican Purana, the *teoamoxtli*, the remembrance of which has been preserved so many ages in the Azteck traditions, one of those, which monkish fanaticism committed to the

flames in Yucatan, and the loss of which book was so deeply lamented by Acosta, who was more learned and enlightened than his contemporaries? Is it certain, that the Toltecks, that industrious and enterprising people, who have several traits of resemblance with the Tchouds *, or ancient inhabitants of Siberia, were the first to introduce painting? or had the Cuitlaltecks and the Olmecks, who dwelt on the elevated plain of Anahuac before the irruption of the nations of Aztlan, and to whom the learned Siguenza attributes the construction of the pyramids of Teotihuacan, already recorded their annals and their mythology in collections of hieroglyphical paintings? We have not data enough to answer these important questions; the obscurity, that envelops the origin of the Mongul and Tartar nations, seems to extend over the whole history of the New Continent.

The Codex Borgianus has been commented upon by the Jesuit Fabrega, of Mexican origin. During my last abode in Italy, in 1805, the Chevalier Borgia, nephew of the Cardinal, had the kindness to send for the Mexican manuscript with its commentary from Veletri to Rome. I examined them carefully: the explanations of P. Fabrega appeared to me often arbitrary and

* Voyage de Pallas (traduction de Paris), tom. 4, p. 382.

fanciful. I have engraved a part of the figures, which most excited my curiosity; I have added to each group, represented in the 15th plate, the citation of the *Codex Borgianus*, and that of the Italian manuscript, which was to serve as a commentary.

No. I. An unknown animal, decorated with a collar, and a kind of harness, but pierced with darts. Fabrega calls it the *crowned rabbit*, the *sacred rabbit*. This figure is found in several rituals of the ancient Mexicans. According to the traditions, which have been preserved to our times, it is a symbol of suffering innocence. Under this point of view, the allegorical representation reminds us of the lamb of the Hebrews, or the mystic idea of an expiatory sacrifice, destined to calm the anger of the divinity. The incisive teeth, and the form of the head and tail, seem to indicate, that the painter wished to represent an animal of the order glires *(rongeurs)*: although the feet with two hoofs, and a toe which does not touch the ground, indicate a species of the ruminating tribe; I doubt whether it be a *cavia*, or Mexican hare; perhaps it may be some unknown quadruped, living in the interior, on the north of the Rio Gila, towards the north-west part of America.

This same animal, with a much longer tail, seems to me to figure a second time in the *Codex Borgianus* at the fifty-third page: of this No. 11,

of the 15th plate, is a copy. P. Fabrega takes this figure, which is covered with twenty hieroglyphics of the days, for a stag (*mazatl*); P. Rios asserts, that it is an astrological conceit of the physicians; a painting which teaches, that he who is born on such or such a day, shall have pains in his eyes, his stomach, or his ears: we see indeed, that the twenty simple hieroglyphics of the days are distributed over different parts of the body.

The sign of the day which began the small period of thirteen days, or the half lunation, was considered as ruling for the whole of this period; so that a man born on the day when the hieroglyphic was an eagle, had every thing to fear, or to hope, each time that an eagle swayed the week of thirteen days. Mr. Zoega* seems to adopt the explanation of Rios; and finds a striking connexion between this fiction and the iatromathematic ideas of the Egyptians. If we cast our eyes over our own almanacks, we shall see, that these absurd ideas tarnish even our own times; since it is often less profitable to enlighten the people, than to encourage their credulity. I found this same allegorical figure, which belongs to astrological medicine, in the *Codex Borgianus*, fol. 17 (MSS. No. 66) and in the *Codex Anonymus* of the Vatican, fol. 54.

* Zoega, p. 523 and 531.

No. 3, 5, 6, 7. A child newly born is represented four times. The hair, which rises like two horns on the top of the head, indicates that it is a girl. The child is sucking; the umbilical cord is cutting; she is presented to the divinity: and her eyes are touched as a sign of benediction. Fabrega asserts, that the seated figures, No. 5 and 7, represent two priests. He thinks he recognizes, by the helmet of No. 7, the high priest of the god Tonacateuctli.

No. 4. The representation of a human sacrifice. A priest, whose figure is almost lost under a monstrous disguise, is tearing out the heart of the victim; his left hand is armed with a club; the naked body of the victim is painted; spots are marked on it, by which the skin of the jaguar, or American tiger, were meant to be imitated; on the left is another priest (*topiltzin*), who pours the blood of the heart plucked out upon the image of the sun placed in a niche in a temple. I should not have engraved this hideous scene, if the disguise of the sacrificer did not present certain remarkable analogies with the Ganesa of the Hindoos, which do not seem accidental. The Mexicans made use of helmets, which imitated the form of the head of a serpent, a crocodile, or a jaguar. In the mask of the sacrificer, we discover the resemblance of the trunk of an elephant, or some pachydermatous animal resembling it in the configuration of the head,

but the upper jaw bone is furnished with incisive teeth. The muzzle of the tapir is no doubt somewhat longer than the snout of our swine, but there is a great distance from the muzzle of the tapir to the trunk figured in the Codex Borgianus. Had the people of Aztlan, sprung from Asiatic origin, preserved some vague notions of elephants? or, which appears to me much less probable, did their traditions go back to the period, when America was yet peopled with those gigantic animals, the petrified skeletons of which are found buried in the marly lands even on the ridge of the Mexican Cordilleras? May there not also exist, in the north-west part of the New Continent, in countries which have been visited neither by Hearne, Mackenzie, nor Lewis, some unknown animal of this kind, which, from the configuration of its trunk, holds the middle place between the elephant and the tapir? The hieroglyphics of the days, which surround the group figured in the forty-ninth page of the collection of Veletri, clearly indicate, that this sacrifice was made at the end of the year, after the *nemontemi*, or complementary days. The temple of the Sun reminds us of the worship of a mild and humane people, the Peruvians. That worship, in which no other offerings were made to the divinity than flowers, incense, and the first fruits of their harvests, existed without doubt at Mexico to the beginning of the fourteenth cen-

tury. A learned writer *, who has made some curious comparisons between the mythological ideas of different nations, has hazarded the hypothesis, that the two religious sects of India, the worshippers of Vishnoo, and those of Siva, had spread themselves into America; and that the Peruvian worship was that of Vishnoo, when he appeared under the figure of Crishna, or the Sun; while the sanguinary worship of the Mexicans is analogous to that of Siva, when he takes the character of the Stygian Jupiter. The wife of Siva, the black goddess Cali, or Bhavani †, the symbol of death and destruction, wears, in the Indian statues and paintings, a necklace of human skulls: and to her the Vedas enjoin the offering of human sacrifices. The ancient worship of Cali, the horrible cruelty of which was mitigated by the reform of Bouddha, forms no doubt a great resemblance with the worship of Mictlancihuatl, the goddess of Hell, and with that of several other Mexican divinities: but in studying the history of the people of Anahuac, we are tempted to consider these resemblances as merely accidental. We have no right to presume communications, wherever we find, among

* Frederic Leopold, Count Stolberg, Geschichte der Religion Jesu Christi, B, 1, p. 426.

† Asiatic Researches, vol. 1, p. 203 et 293.

half civilized people, the worship of the Sun, or the custom of sacrificing human victims; and this custom, far from having been brought from eastern Asia, may very probably have taken birth in the valley of Mexico itself. In fact, history instructs us, that, when the Spaniards arrived at Tenochtitlan, this sanguinary worship, which reminds us of those of Cali, of Moloch, and of the Esus of the Gauls, had existed only two hundred years.

The nations, which from the seventh to the twelfth century have successively inundated Mexico, the Toltecks, the Chichimecks, the Nahuatlacks, the Acolhuans, the Tlascaltecks, and the Aztecks, formed a single group, connected by analogy of language and manners; somewhat like the Germans, the Norwegians, the Goths, and the Danes, who are all confounded in a single race, that of the Germannic nations. It is probable, as we have already stated, that other nations, the Otomites, the Olmecks, the Cuitlatecks, the Zacatecks, and the Tarascks, appeared before the Toltecks in the equinoctial region of New-Spain. Wherever nations have advanced in the same direction, the position of the countries in which they are found marks in some sort the chronological order of their migrations. Can we doubt, that in Europe, the most western nations, the Iberians, and the Can-

tabri, arrived thither before the nations the nearest Asia, before the Thracians, the Illyrians, and the Pelasgi?

But, whatever be the relative antiquity of the different races of men settled in the mountains of Mexico, the Caucasus of America, it appears certain, that none of these nations, from the Olmecks to the Aztecks, had for a long time been acquainted with the barbarous custom of sacrificing human victims. The principal divinity of the Toltecks was called *Tlalocteuctli;* he was at once the god of water, of mountains, and of tempests. In the eyes of these mountaineers, it is on the lofty summits perpetually enveloped in clouds, that the mysterious preparation of thunder takes place; there the abode of the great spirit Teotl is fixed; of that invisible being called *Ipalnemoani* and *Tlock-Nahuack*, because he is self-existent, and contains all things within himself; and from this almost inaccessible region rushes the tempest, which destroys the hut, and the beneficent rain, which enlivens the fields. The Toltecks had erected on the top of a high mountain the image of Tlalocteuctli: this image, rudely carved, was made of a white stone, considered as divine *(teotetl)*, for this people, like the ancient Orientals *, attached superstitious ideas to the color of certain stones. Tlalocteuctli

* Millii Dissertationes selectæ, p. 309.

was represented with thunder in his hand, seated on a stone in the form of a cube, and having before him a vase in which caoutchouc and seeds were offered him. The Aztecks followed this same worship till the year 1317, when the war with the inhabitants of the town of Xochimilco furnished them with the first idea of a human sacrifice. The Mexican historians, who, immediately after the taking of Tenochtitlan, wrote in their own language, but making use of the Spanish alphabet, have transmitted to us this horrible event.

From the beginning of the fourteenth century the Aztecks lived under the sway of the King of Colhuacan, and had principally contributed to the victory, which this king had gained over the Xochimilcks. When the war was finished, they were desirous of offering a sacrifice to their principal god, Huitzilopochtli, or Mexitli, whose image in wood, placed in a chair of reeds, called the *seat of god, teoicpalli*, and carried on the shoulders of four priests, had preceded them in their migration. They asked their master, the King of Colhuacan, to bestow on them some objects of value, to give greater solemnity to this sacrifice. The king, if we may give this title to the chief of a scanty tribe, sent them a dead bird, wrapped in a coarse cloth; and to add mockery to insult, he proposed to them to attend at the festival

himself. The Aztecks professed to be flattered with this offer; but they resolved at the same time to make a sacrifice, which should strike terror into their masters. After a long dance around their idol, they brought forth four Xochimilcks, prisoners, whom they had kept hidden a long time: these miserable captives were immolated with the ceremonies still observed at the time of the conquest by the Spaniards, on the platform of the great pyramid of Tenochtitlan, which was dedicated to the same god of war, Huitzilopochtli. The Colhuans signified their just abhorrence of this human sacrifice, the first which had been made in their country: but fearing the ferocity of their slaves, and seeing them puffed up with pride at the success obtained in the war against the Xochimilcks, they gave the Aztecks their liberty, enjoining them to quit the territory of Colhuacan.

The first sacrifice had happy effects for a nation that was oppressed; vengeance soon gave birth to a second. After the foundation of Tenochtitlan, an Azteck scours the border of the lake, to kill some animal for an offering to the god Mexitli; he meets an inhabitant of Colhuacan, called Xomimitl. Irritated against his former masters, the Azteck attacks the Colhuan: the conquered Xomimitl is led to the

new city, and expires on the fatal stone placed at the foot of the idol.

The circumstances of the third sacrifice were still more tragic. Peace is reestablished apparently between the Aztecks, and the inhabitants of Colhuacan: nevertheless the priests of Mexitli cannot conquer their hatred against a neighbouring nation, that had enslaved them: they meditate atrocious vengeance; they persuade the King of Colhuacan to entrust them with his only daughter, to be brought up in the temple of Mexitli, where, after her death, she should be worshiped as the mother of this protecting divinity of the Aztecks; adding, that it was the idol himself, who declared his will by their mouths. The credulous king accompanies his daughter; he leads her into the dark recess of the temple: there the priests separate the father from the child; a tumult is heard in the sanctuary; the unfortunate king does not distinguish the groans of his expiring daughter; a censer is placed in his hand; and a few moments after, he is ordered to light the copal. By the pale glare of the rising flame he beholds his child bound to a pillar, her bosom mangled, motionless, and robbed of life. Despair deprived him of the use of reason for the remainder of his days; he was unable to avenge himself, and the Colhuans dared not

resent the injury done them by a people, who struck them with terror by such an excess of ferocity. The immolated victim is placed among the Azteck divinities, under the name of *Teteionan* *, mother of the gods, or *Tocitzin our grandmother;* a divinity which we must not confound with Eve, or the serpent-woman, called *Tonantzin.*

In the Old Continent, wherever we find traces of human sacrifices, their origin is lost in the night of time. The history of the Mexicans, on the contrary, has handed down to us the narrative of events, which have given a ferocious and sanguinary character to the worship of a people, among whom animals and first fruits were the only primitive offerings. I have thought fit to relate these traditions, undoubtedly founded on historical truth: intimately connected with the study of the manners, and the moral improvement of our species, they appear to me more interesting, than the puerile tales of the Hindoos respecting the numerous *incarnations* of their divinities. I shall not however decide the question, whether the sacrifice of the four Xochimilcks was really the first offered to the god Mexitli; or whether the Aztecks had not preserved some old tradition, according to which they imagined, that the god

* Clavigero, vol. 1, p. 166, 168, 172; vol. 2, p. 22.

of war savored the blood of human victims. Mexitli came into the world with a dart in his right hand, a buckler in his left, and his head covered with a helmet crowned with green feathers; his first feat at his birth was to kill his brothers and sisters. Perhaps, under other climates, sanguinary rites had been offered to this terrible god, called also *Tetzahuitl*, or the *terrific;* perhaps this worship had a respite only because prisoners were wanting, and consequently victims; while the nation, marching under the auspices of Mexitli, made a peaceable progress across the mountains of Tarahumara to the elevated central plain of Mexico.

The continual wars of the Aztecks, after they had fixed their residence on the islets of the salt lake of Tezcuco, furnished them with so considerable a number of victims, that human sacrifices were offered to all their divinities without exception, even to Quetzalcoatl *, who, like the Bouddha of the Hindoos, had preached against this execrable custom; and to the goddess of the harvests, the Mexican Ceres, called *Centeotl*, or *Tonacajohua*, she who *feeds mankind.* The Totonacks, who had adopted the whole of the Tolteck and Azteck mythology, distinguished, as of a different race,

* Gomara, Chronica general de las Indias, (edition of 1553), vol. 2, fol. 134.

the divinities that required a sanguinary worship, and the goddess of the fields, who asked only for offerings of flowers, and fruits, the sheaf of maize, or the birds that devoured the seed of this plant, so useful to man. An ancient prophecy gave this nation some hope of a beneficent reform in its religious ceremonies; this prophecy stated, that Centeotl, who is the same with the beautiful Chri, or Lakchmi, of the Hindoos; and whom the Aztecks, like the Arcadians, designated under the name of the *great Goddess*, or *primitive Goddess (Tzinteotl)*; should triumph at last over the ferocity of the other gods; and that human sacrifices should give place to innocent offerings, and the first fruits of the harvests. In this tradition of the Totonacks we behold a struggle between two religions; a conflict between the ancient Tolteck divinity, mild and humane like the people who had introduced its worship, and the ferocious gods of that warlike tribe, the Aztecks, who had stained the fields, the temples, and the altars, with blood.

When we read the letters of Cortez to the Emperor Charles V, the memoirs of Bernal Diaz, of Motolinia, and other Spanish authors, who had made observations on the Mexicans before the changes wrought on them by their communications with Europe, we are astonished, that

such extreme ferocity in religious ceremonies should be found among a people, whose social and political state reminds us, in other points of view, of the civilization of the Chinese, and the inhabitants of Japan. The Aztecks were not satisfied with dyeing their idols with blood, as is practised still by the Chaman Tartars, who however sacrifice to their *Nogats* oxen and sheep only; they even devoured a part of the carcase, which the priests threw down to the bottom of the staircase of the teocalli, after having torn out the heart. We cannot mention these objects without inquiring, whether these barbarous rites, which we find also in the islands of the South Sea, among nations whose mild manners have been too much vaunted, would have ceased of themselves, if the Mexicans, without having any communication with the Spaniards, had continued to advance toward civilization. It is probable, that this beneficent reform in their worship, this triumph of the goddess of the harvests over the gods of carnage, would have been very long delayed.

In South America, the most powerful nation, the Peruvians, followed the worship of the Sun. The most bloody wars were waged by the Incas, to introduce a peaceable and gentle religion; human sacrifices vanished, wherever the descendants of Manco-Capac carried their laws, their divi-

sions into casts, their language, and their monastic despotism. In the country of Anahuac the sanguinary rites of Huitzilopochtli were established, in proportion as the Mexican empire swallowed up all the neighbouring states. The greatness of this empire was founded on an intimate alliance of the class of the priesthood with the nobility destined to the trade of arms. The high priest, teoteuctli *(divine Lord)*, was generally a prince of the royal blood; and no war could be undertaken without his permission. The priests even went to combat, and were raised to the first dignities in the army*; their influence became thereby as extensive as that of the Roman patricians, who had the exclusive right of augury, and in which a celebrated writer† has seemed to recognize traces of a political institution of the Hindoos.

In Mexico, where the number and the power of the priests *(teopixquis)* and the monks *(tlamacazques)* were almost as great as they are at present in Thibet and Japan, every thing which was the effect of religious fanaticism would have been changed but very slowly. History proves, that the barbarous custom of human sacrifices

* Peintures hieroglyphiques du Recueil de Mendoza. Thevenot, vol. 4, fol. 57.

† Schlegel, Weisheit der Indier, s. 190.

was preserved for a length of time among the nations most advanced in civilization. The paintings found in the tombs of the kings at Thebes leave no doubt, that these sacrifices were habitual among the Egyptians*. We have already observed, that formerly in India the goddess Cali required human victims, as Saturn exacted them at Carthage. At Rome, after the battle of Cannæ, two Gauls, a male and female, were buried alive; and the Emperor Claudius was obliged, to forbid by an express decree the sacrifice of men in the Roman empire†. But still more, in times less remote, what savage effects of religious intolerance do we not ourselves see amid the civilization of the human race, at the period of a general melioration of characters and manners? Whatever be the difference among nations in the progress of their intellectual culture, fanaticism and interest still hold their fatal sway. Posterity will scarcely conceive, that in polished Europe, under the influence of a religion, which, from the nature of its principles, favours liberty, and proclaims the

* Voyage de Denon, p. 208, pl. 124, No. 2. Décade Egyptienne, tom. 3, p. 110.

† Sueton. c. 25, (ed. Wolf., vol. 1, p. 48). Plin. Hist. Nat. lib. 31, c. 1; lib. 8, c. 22. Tertullian. Apologet. adversus Gentes, c. 9, (ed. Palmer, 1684, p. 41). Lactant. Div. Instit. lib. 1, c. 21.

sacred rights of mankind, there exist laws, which sanction the slavery of the blacks, which permit the planter to tear the child from its mother's arms, to sell it in a distant land. These considerations prove to us, and the fact is not very consolatory, that whole nations may advance rapidly toward civilization, while their particular institutions, and their religious rites, retain the marks of their original barbarism.

Number 8 indicates the ceremony of kindling the new fire, at the period of the procession which was made every fifty-two years to the summit of a mountain near Iztapalapan.

At the end of each cycle the intercalation was made, sometimes of twelve, and at others of thirteen days. The people, expecting at the same time the fourth destruction of the Sun and the Earth, extinguished all the fires; till, at the beginning of the new cycle, the priests lighted them anew. The painting represents a victim stretched on the stone of sacrifice, having a wooden disk on the breast, which the teopixqui inflames by rubbing. The hieroglyphic of the starry sky, which we see in the preceding page of the Borgian collection, seems to have a reference to the culmination of the Pleiades. We shall treat farther on, in the explanation of the twenty-third plate, of the connexion, which, it is said, existed between this culmination and the beginning of the cycle.

The art of producing fire, by rubbing together two kinds of wood of different hardness, is of remote antiquity. We find it among the nations of both continents: in the Homeric times, according to Mr. Visconti, the invention was attributed to Mercury *. The disk, which lies on the body of the victim, and on which the priest turns the cylindric wood, is the στροφευς of the Greeks †. Pliny asserts, that of all the woody substances, the ivy is that which ignites best when it is rubbed with laurel wood ‡. We have found these πυρεια among the Indians of the Orinoco. It requires a great rapidity of motion, to raise the temperature to the degree of incandescence.

No. 9. Figure of a dead king, surrounded by four flags, the eyes shut, no hands, the feet wrapped up. The chair is the royal seat called *tlatocaicpalli*, on which is represented, in the Codex Borgianus (fol. 9), Adam, or Tonacateuctli, the *Lord of our flesh*, and Eve, or Tonacacihua. This hieroglyphical character is found figured in the ritual almanack, at the page which indicates the cycle of thirteen

* Homer. Hymn. in Mercur. v. 110.

† Apollon. Rhod. Argonaut, lib. 1, v. 1164, et *Schol. ad eum.*

‡ Plin. Hist. Natur. lib. 16, c. 77. Seneca Nat. Quæst. II, 22. Theophr. c. 10.

days, during which the Sun passes the zenith at Mexico.

No. 10. An allegory, which reminds us of the purifications of India. A divinity, whose enormous nose is decorated with the figure of the two headed snake, or mysterious amphisbæna, carries in his hand a *xiquipilli*, or a purse of incense: we see on his back a broken vase, from which issues a serpent; another serpent, bleeding, and cut in pieces, is before him; a third serpent, equally mangled, is contained in a chest full of water, from which rises a plant. We discover on the right a man placed in a vase; on the left a woman adorned with flowers, probably the voluptuous Tlamezquimilli, who is represented also with a bandage on her eyes. In the same page we find an agave, which, when cut, yields blood. Does this allegory allude to the serpent that poisons the water, the source of all organic life *, to the victory of Crishna over the dragon Kaliya, to the seduction and purification by fire? It is evident, that the figure of the serpent in the Mexican paintings represents two different ideas. In the reliefs which indicate the divisions of the year and of the cycles, this figure expresses only time, *ævum*. The serpent represented in company with the *mother of men* (Cihuacohuatl),

* Paullinus de S. Bartholomæo, Codices Avenses, p. 235.

or crushed by the great spirit, Teotl, when he takes the form of one of the subaltern divinities, is the genius of evil, a real κακοδαιμων. Among the Egyptians this last idea was expressed, not by the hieroglyphic of the serpent *, but that of the hippopotamus. Les figures sans vêtemens, comme celle du groupe No. 10, et la déesse de la volupté, appelée Ixcuina ou Tlazolteucihua †, sont extrêmement rares dans les peintures Mexicaines. En général, les peuples barbares donnent des vêtemens à leurs statues; c'est un raffinement de l'art de présenter le corps nu dans la beauté naturelle de ses formes. Il est très-remarquable aussi que parmi les hiéroglyphes Mexicains on ne découvre absolument rien qui annonce le symbole de la force generatrice, ou le culte du lingam, qui est répandu dans l'Inde et parmi toutes les nations qui ont eu des rapports avec les Hindoux. M. Zoega a observé que l'emblème du phallus ne se trouve pas non plus dans les ouvrages Egyptiens d'une haute antiquité; il a cru pouvoir en conclure que ce culte est moins ancien qu'on ne le suppose. Cette assertion est cependant contraire aux notions que Hamilton, Sir William Jones, and M. Schlegel, ont puisées dans le

* Zoega, p. 445, n. 35.

† Codex Borg. MSS. fol. 73.

Siva Pourâna *, dans le Kâsi Khanda, et dans plusieurs autres ouvrages écrits en langue Sanskrit. On ne sauroit douter que l'adoration des douze lingams, venus du sommet de l'Imaüs (Himâvata), ne remonte jusqu'à l'époque des premières traditions des Hindoux. Au milieu de tant d'autres rapports qui annoncent d'anciennes communications entre l'Asie orientale et le nouveau continent, on doit être surpris de ne pas trouver dans ce dernier quelques traces du culte du phallus. M. Langles † observe expressément que, dans l'Inde, les Vaichnava, ou sectateurs de Vichnou, ont horreur de cet emblème de la force productrice, que l'on adore dans les temples de Siva et de son épouse, la deesse de l'abondance, Bhavânî. Ne pourroit-on pas supposer qu'il existe également parmi les Bouddhistes exilés dans le nord-est de l'Asie une secte qui rejette le culte du lingam, et que c'est de ce Bouddhisme épuré qu'on retrouve quelques foibles traces parmi les peuples Américains ?

* Catalogue des Manuscrits Sanskrits de la bibliothéque impériale, p. 36, et 50.

† Recherches Asiatiques, Tom. 1, p. 215.

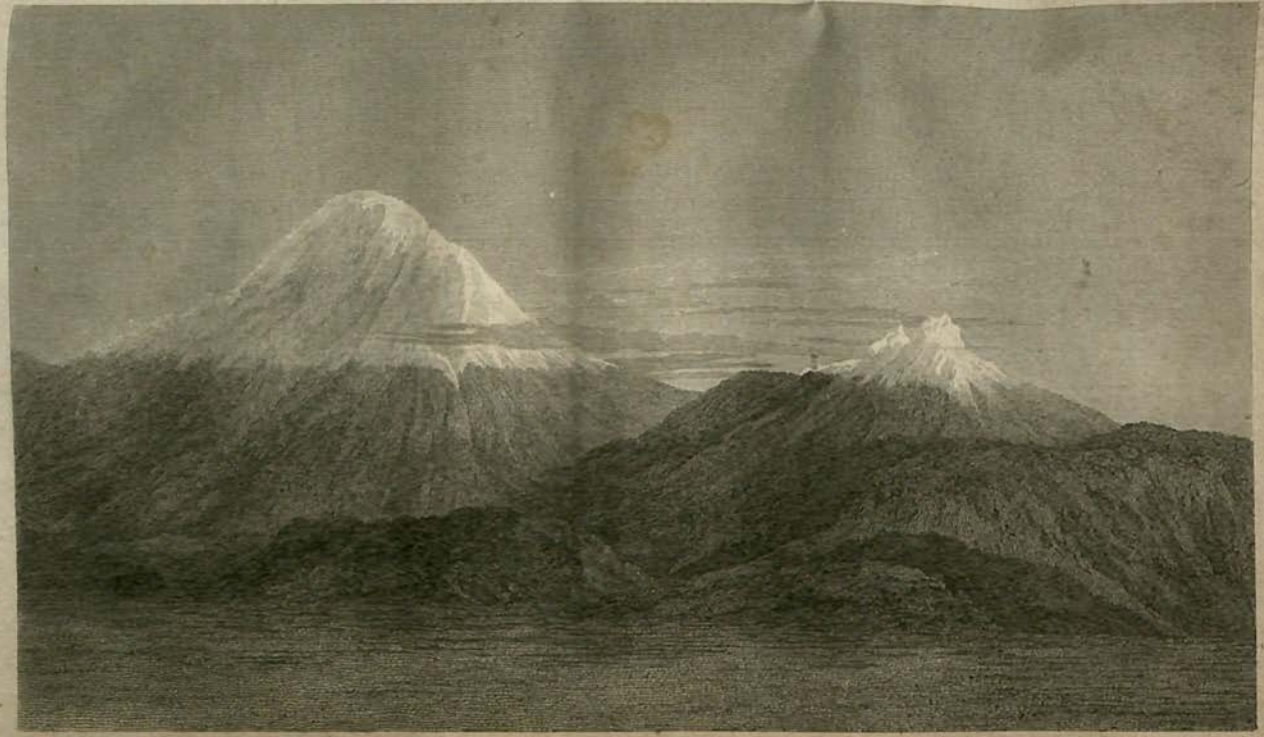
VIEW

OF

CHIMBORAZO AND CARGUAIRAZO.

PLATE XVI.

A PART of the Cordillera of the Andes is divided into several branches, separated from each other by longitudinal valleys; another part forms only a single mass, beset with volcanic summits. In the description of the passage of the mountain of Quindiu (plate 5th) we have attempted to give a geological sketch of the ramifications of the Cordilleras in the kingdom of New Grenada, between 2° 30′ and 5° 15′ of northern latitude. We observed at the same time, that the great valleys, placed between the two lateral branches and the central chain, were the basins of two considerable rivers, the bed of which is yet less elevated above the level of the ocean than that of the Rhone, the waters of which have hollowed out the valley of Sion



A View of the Mountains of Chimboraço and Carguairaço in South America.

in the higher Alps. On advancing from Popayan toward the south, we see on the arid elevated plain of the province of *Los Pastos* the three small chains of the Andes lost in one group, which stretches far beyond the equator.

This group, in the kingdom of Quito, presents an extraordinary appearance from the river of Chota, which meanders amid mountains of basaltic rock to the Paramo of Assuay, on which are seen some remarkable remains of Peruvian architecture. The most elevated summits are arranged in two lines, which form as it were a double ridge to the Cordilleras. These colossal summits, covered with perpetual ice, served for signals in the operations of the French academicians at the time of the measurement of the equinoxial degree. Their symmetrical disposition, in two lines directed from north to south, has led Bouguer to consider them as two chains of mountains, separated by a longitudinal valley: but what this celebrated astronomer calls the bottom of a valley is the summit of the Andes itself; it is an elevated plain, the absolute height of which is from two thousand seven hundred to two thousand nine hundred metres. We must not confound a double ridge with a real ramification of the Cordilleras.

The plain covered with pumice stone, that

forms the fore ground of the drawing of which we here give the description, is a part of this elevated plain, which separates the western from the eastern ridge of the Andes of Quito. In these plains the population of this marvellous country is concentrated; towns are there built, which contain from thirty to fifty thousand inhabitants. When we have lived for some months on this elevated spot, where the barometer keeps at twenty inches high, we feel the irresistible influence of an extraordinary illusion: we forget by degrees, that every thing which surrounds the observer; those villages which proclaim the industry of a mountainous people; those pastures, covered at the same time with herds of lamas, and flocks of European sheep; those orchards bounded by hedges of tunanta and barnadesia; those fields cultivated with care, and promising the richest harvests; hang as it were suspended in the lofty regions of the atmosphere: we scarcely recollect, that the soil we inhabit is more elevated above the neighbouring coasts of the Pacific Ocean, than the summit of Canigou above the basin of the Mediterranean.

Considering the ridge of the Cordilleras as a vast plain curtained by distant mountains, we accustom ourselves to look on the inequalities of the summit of the Andes as so many isolated tops. Pichincha, Cayambé, Cotopaxi,

all those volcanic peaks, which we call by particular names, though at more than half their total height they form but one mass; appear to the eyes of the inhabitant of Quito as so many distinct mountains, which tower amid a plain unclothed by forests. This illusion is so much the more complete, as the breaches in the double ridge of the Cordilleras reach down to the level of the high inhabited plains. Hence the Andes have the appearance of one chain only when they are seen at a distance, from the coasts of the great ocean, or from the savannahs, which extend to the foot of their eastern declivity. Placed even on the ridge of the Cordilleras, either in the kingdom of Quito, or in the province of Los Pastos, or still farther to the north, in the interior of New Spain, we see only a heap of scattered summits, groups of isolated mountains, which detach themselves from the central elevated plain: the greater the mass of the Cordilleras, the more difficult it is to contemplate as a whole their structure and their form.

The study of this form, however, or, if I may be allowed the expression, of this physiognomy of the mountains, is singularly facilitated by the direction of the lofty plains, which constitute the ridge of the Andes. When we travel from the city of Quito to the Paramo of Assuay, we see, in a journey of thirty seven leagues to the

west, the summits of Casitagua, Pichincha, Atacazo, Corazon, Iliniza, Carguairazo, Chimborazo, and Cunambay, rise in succession; and to the east the tops of Guamani, Antisana, Passuchoa, Ruminnavi, Cotopaxi, Quelendanna, Tungurahua, and Capa-Urcu, which, with the exception of three or four, are all higher than Mount Blanc. These mountains are so arranged, that, viewed from the central plain, far from hiding each other, they exhibit themselves in their real shape, as if projected on the azure vault of the sky; we imagine we behold on the same vertical plane their summit and their peak; they remind us of the stupendous view of the coasts of New Norfolk and Cook's River: and appear like a bold rocky coast, which, rising from the bosom of the waters, seem so much the less distant, as no object is placed between the shore and the eye of the observer.

But if the structure of the Cordilleras, and the form of the central elevated plain, are favorable for geological observations; if they enable the traveller to examine with facility the outlines of the double ridge of the Andes: the enormous elevation of this plain gives a less appearance of loftiness to summits, which, if placed on islets, scattered along the immensity of the ocean, like Mowna-Roa and the Peak of Teneriffe, would astonish more by their stupendous height. The plain of Tapia, seen on the fore-

ground of the sixteenth plate, and in which I have sketched, near Riobamba-Nuevo, the group of Chimborazo and Carguairazo, has an absolute elevation of 2891 metres (1493 toises); it is only a sixth less elevated than the top of Etna. The summit of Chimborazo does not therefore surpass the height of this plain more than 3640 metres, which is 84 metres less than the height of the top of Mount Blanc above the priory of Chamonix; for the difference between Chimborazo and Mount Blanc is nearly equal to that which is observed between the elevation of the plain of Tapia, and the bottom of the valley of Chamonix. The top of the Peak of Teneriffe, compared with the level of the town of Oratava, is still more elevated than Chimborazo and Mount Blanc above Riobamba and Chamonix.

Mountains which would astonish us by their height, if they were placed near the sea-shore, seem to be but hills when they rise from the ridge of the Cordilleras: Quito, for instance, is backed by a small cone called Javirac, which does not seem higher to the inhabitants of that city, than Mountmartre, or the heights of Meudon, appear to the inhabitants of Paris. This cone of Javirac, according to my measurement, is, however, 3121 metres (1600 toises) of absolute height; and is almost as lofty as the

summit of Marbore, one of the highest summits of the chain of the Pyrenees.

Notwithstanding the effects of this illusion produced by the height of the plains of Quito, of Múlalo, and Riobamba, we should seek in vain near the coasts, or on the eastern slope of Chimborazo, a place that would afford so magnificent a view of the Cordilleras, as that I enjoyed for several weeks in the plain of Tapia. When we are placed on the back of the Andes, between the double ridge formed by the colossal tops of Chimborazo, Tungurahua, and Cotopáxi, we are still near enough their summits to see them under angles of considerable altitude; but in descending toward the forests, which environ the foot of the Cordilleras, these angles become very small; for, on account of the enormous mass of the mountains, we rapidly leave the summits at a distance, in proportion as we approach the level of the ocean.

I have sketched the outlines of Chimborazo and Carguairazo, by the use of the same graphic means as I have already mentioned, when I spoke of the drawing of Cotopaxi. The line marking the inferior limits of the perpetual snows is at a height, which somewhat exceeds that of Mount Blanc, for this last mountain, if placed under the equator, would be covered but occasionally with snow. The constant tem-

perature, which reigns under this zone, is the cause why the limit of perpetual ice is not subject to those irregularities, which we observe in the Alps and the Pyrenees. On the northern declivity of Chimborazo, between that mountain and Carguairazo, the road leads from Quito to Guayaquil, and toward the coasts of the Pacific Ocean. The paps covered with snow, which rise on this side, remind us, by their form, of that of the dome of Gouté, seen from the valley of Chamonix. On a narrow ridge, which rises amidst the snows on the southern declivity, M. M. Bonpland, Montufar, and myself, attempted to reach, not without danger, the summit of Chimborazo. We carried instruments to a considerable height, though we were surrounded by a thick fog, and very much incommoded by the great tenuity of the air. The point where we stopped to observe the inclination of the magnetic needle was more elevated than any yet attained by man on the ridge of mountains; it was more than eleven hundred metres higher than the top of Mount Blanc, which the most enlightened and most intrepid of travellers, Mr. de Saussure, had the satisfaction of reaching, after struggling against difficulties still greater than those we had to conquer near the summit of Chimborazo. These laborious excursions, the narratives of which generally excite the attention of the public, offer but a very small number

of results useful to the progress of science; the traveller finds himself on ground covered with snow, in a stratum of air, the chemical mixture of which is the same as that of the lower regions, and in a situation in which delicate experiments cannot be made with all the exactness requisite.

If we compare the fifth, tenth, and sixteenth plates of this work with those of the geographical and physical Atlas, which accompanies my Essay on the Kingdom of New-Spain, we distinguish three kinds of principal forms belonging to the high tops of the Andes. The volcanoes which are yet burning, those which have but a single crater of extraordinary size, are conic mountains, with summits truncated in a greater or less degree: such is the figure of Cotopaxi, of Popocatepec, and the Peak of Orizaba. Volcanoes, the summits of which have sunk after a long series of eruptions, exhibit ridges bristled with points, needles leaning in different directions, and broken rocks falling into ruins. Such is the form of the Altar, or Capac-Urcu, a mountain once more lofty than Chimborazo, and the destruction of which is considered as a memorable period in the natural history of the New Continent; such is the form also of Carguairazo, a great part of which fell in on the night of the 19th of July, 1698. Torrents of water and mud then issued from the opened sides of the moun-

tain, and laid waste the neighbouring country. This dreadful catastrophe was accompanied by an earthquake, which, in the adjacent towns of Hambato, and Llactacunga, swallowed up thousands of inhabitants.

A third form of the high tops of the Andes, and the most majestic of the whole, is that of Chimborazo, the summit of which is circular; it reminds us of those paps without craters, which the elastic force of the vapours swells up in regions where the hollow crust of the Globe is mined by subterraneous fires. The aspect of mountains of granite has little analogy with that of Chimborazo. The granitic summits are flattened hemispheres; the trappean porphyry forms slender cupolas. Thus on the shore of the South Sea, after the long rains of winter, when the transparency of the air has suddenly increased, we see Chimborazo appear like a cloud at the horizon; it detaches itself from the neighbouring summits, and towers over the whole chain of the Andes, like that majestic dome, produced by the genius of Michael Angelo, over the antique monuments, which surround the Capitol.

PERUVIAN MONUMENT

AT

CANNAR.

PLATE XVII.

THE lofty plains, that stretch along the back of the Cordilleras from the equator to the third degree of south latitude, end where a mass of mountains rises from four thousand five hundred to four thousand eight hundred metres of height, which like an enormous dyke unites the eastern to the western ridge of the Andes of Quito. This group of mountains, in which porphyry covers mica-slate and other rocks of primitive formation, is known by the name of the *Paramo del Assuay*. We were obliged to cross it, in order to go from Riobamba to Cuenca, and to visit those beautiful forests of Loxa, which are so celebrated for their fruitfulness in bark *. The

* Cinchona.

journey over Assuay is formidable, especially in the months of June, July, and August, when there are immense falls of snow, and the icy winds of the south sweep over these regions. As the high road, according to the measures I took in 1802, is almost the height of Mount Blanc, the travellers are exposed to a cold so excessive, that several perish every year from its effects. In the middle of this journey, at the absolute height of four thousand metres, we cross a plain, the extent of which is six square leagues. This plain (and this remarkable fact throws some light on the formation of elevated plains) is almost on the level of the savannahs, by which the part of the volcano of Antisana covered with eternal snows is surrounded. The elevated plains of Assuay and of Antisana, the geological construction of which has such striking resemblances, are nevertheless more than fifty leagues distant from each other: they contain lakes of fresh water of considerable depth, and bordered by a thick turf of Alpine grasses, but no fish, and scarcely any aquatic insect, enlivens their solitude.

The soil of the Llano del Pullal, the name given to the high plains of Assuay, is excessively marshy. We were surprised to find in this place, and at heights which greatly surpass the top of the Peak of Teneriffe, the magnificent re-

mains of a road constructed by the Incas of Peru. This causeway, lined with free-stone, may be compared to the finest Roman roads I have seen in Italy, France, or Spain: it is perfectly straight, and keeps the same direction for six or eight thousand metres. We observed the continuation of this road near Caxamarca, 120 leagues to the south of Assuay; and it is believed in the country, that it led as far as the city of Cuzco. Near this road over the Assuay, at the absolute height of 4042 metres (2074 toises) are the remains of the palace of the Inca Tupaynpangi, the ruins of which, commonly called *los Paredones*, are but of small elevation.

In descending from the Paramo of Assuay, toward the south, we discover, between the farms of Turche and Burgay, another monument of ancient Peruvian architecture, known under the name of *Ingapilca*, or the fortress of Cannar. This fortress, if we can so call a hill terminated by a platform, is much less remarkable for its height, than its perfect preservation. A wall built of large blocks of free-stone rises to a height of five or six metres. It forms a very regular oval, the great axis of which is nearly thirty-eight metres in length. The interior of this oval is a flat piece of ground covered with rich vegetation, which increases the picturesque effect of the landscape. In the centre of the enclosure is

a house, containing only two rooms, which are near seven metres in height. This house and the enclosure, represented in the sixteenth plate, form part of a system of walls and fortifications, of which we shall hereafter speak, and which are more than one hundred and fifty metres in length. The cut of the stones, the disposition of the doors and niches, the perfect analogy between this edifice and those of Cuzco, leave no doubt respecting the origin of this military monument, which served as a lodging to the Incas, when those princes journeyed occasionally from Peru to the kingdom of Quito. The foundations of a great number of edifices, which surround the enclosure, indicate, that there was room enough at Cannar to lodge the small army, which generally attended the Incas in their journeys. I found among these foundations a stone cut with great nicety, as represented in the fore-ground of the drawing on the left: but I cannot guess the purpose, for which it was shaped in this particular manner.

What is most curious in this small edifice, surrounded by a few trunks of *schinus molle*, is the form of its roof, which gives it a perfect resemblance to European houses. One of the first historians of America, Pedro de Cieca de Leon, who began to describe his travels in 1541, gives the detail of several houses of the Inca in the province of Los Canares. He expressly

says *, that the edifices of Thomebamba have a covering of rushes, so well made, that, if it be not consumed by fire, it will last without alteration for several ages. From this observation we may be led to believe, that the gable of the house of Cannar was added after the conquest; and what seems especially to favor this hypothesis is the existence of open windows in this part of the building; for it is certain, that in the edifices of ancient Peruvian construction, as in the remains of the houses of Pompeia and Herculaneum, no windows are to be found.

M. de la Condamine, in a very interesting Memoir on some ancient Monuments of Peru †, is inclined also to think, that the gable which we observe in the small edifice at Cannar is not of the time of the Incas. He says, "that it is perhaps of modern fabrication; and that it is not of free-stone like the rest of the walls, but of a kind of brick dried in the air, and kneaded with straw." He adds in another place, that the use of those bricks, to which the Indians gave the name of *tica*, was known to the Peruvians long before the arrival of the Spaniards; and that, for this reason, the gable may be of ancient construction, though formed of bricks.

* Pedro de Cieca de Leon, Chronica del Peru (Anvers, 1554), Tom. I, C. 44, p. 120.

† Mémoires de l'Académie de Berlin, 1746, p. 444.

I regret very much not having read the Memoirs of M. de la Candamine before my voyage to America; I am very far from throwing any doubt on the observations of this celebrated traveller, whose labours obliged him to remain a long time in the environs of Cannar, and who had much more leisure than myself to inspect this monument. I am nevertheless surprised, that while examining on the spot itself the question, whether the roof of this building was added in the time of the Spaniards, neither M. Bonpland nor myself was struck with the difference of construction, which is said to exist between the wall and the gable above it. I found no bricks (*ticas* or *adobes*); they seemed to me to be merely freestones, covered with a kind of yellow stucco, easy to detach, and mixed with *ichu*, or chopped straw. The owner of a neighbouring farm, who accompanied us in our excursion to the ruins of Cannar, boasted, that his ancestors had greatly contributed to the destruction of this edifice; he related to us, that the sloping roof had been covered, not in the European manner, that is, with tiles, but with stones slit very thin and highly polished. It was this circumstance particularly, which made me lean then to the opinion, probably erroneous, that, excepting the four windows, the rest of the edifice was such as it had been built in the time of the Incas. However this may be, we must allow, that the use of

roofs with acute angles would have been highly useful in a country of mountains subject to violent rains. These sloping roofs are known to the natives of the north-west coast of America; and were known in the south of Europe in the most remote times, as several Greek and Roman monuments prove; particularly the reliefs on the column of Trajan, and the paintings of landscapes found at Pompeia, and formerly preserved in the fine collection of Portici. The angle at the top of the roof was obtuse among the Greeks; and a right angle among the Romans, who lived in a less favoured climate than that of Greece. The farther we advance toward the north, the more sloping are the roofs.

The drawing of the seventeenth plate was made at Rome, after a sketch of my own, by Mr. Gmelin, an artist justly celebrated for his talents, and the great extent of his knowledge: during my last abode in Italy, he honoured me with his particular friendship, and it is to his care, that I am in a great measure indebted for what, in this book, may not appear altogether unworthy of exciting the interest of the public.

ROCK OF INTI-GUAICU.

PLATE XVIII.

In descending the hill, the summit of which is crowned by the fortress of Cannar, to a valley hollowed by the river Gulan, we find small foot-paths cut in the rock: these paths lead to a fissure, which in the Qquichua language is called *Inti-Guaicu*, or the ravine of the Sun. In this solitary spot, shaded by a beautiful and luxuriant vegetation, rises an insulated mass of sand-stone, which is only four or five metres high. One of the surfaces of this small rock is remarkable for its whiteness: it is cut perpendicularly, as if it had been worked by the hand of man. On this smooth and white ground are concentric circles, which represent the image of the Sun, such as at the commencement of civilization we see it figured among every nation of the Earth. These circles are of a blackish brown; and in the space they enclose we perceive features half effaced, which indicate two eyes and a mouth. The foot of the rock is cut into

steps, which lead to a seat hollowed out in the same stone, and so placed, that from the bottom of a hollow the image of the sun may be seen.

The natives relate, that, when the Inca Tupa-yupangi advanced with his army to make the conquest of the kingdom of Quito, then governed by the Conchocando of Lican, the priests discovered on the stone the image of the divinity, whose worship ought to be introduced among the conquered nations. The inhabitants of Cuzco thought they every where beheld the figure of the Sun, as the Christians, under every zone, have found either crosses, or the print of the feet of the Apostle St. Thomas, traced on rocks. The Peruvian prince and his soldiers considered the discovery of the stone of Inti-Guaicu as of happy augury: it contributed, without doubt, to induce the Incas to build a habitation at Cannar: for it is known, that the descendants of Manco-Capac considered themselves as the children of the star of day, an opinion which offers a singular coincidence between the first legislator of Peru, and that of India*, who was also called *Vaivasaouta*, or son of the Sun.

* Menou 2, or Satyavrata. Recherches Asiatiques, tom. 1, p. 170; tom. 2, p. 172. Paolin. Systema Brachman, p. 141.

On a close examination of the rock of Inti-Guaicu we discovered, that the concentric circles were small veins of brown iron ore, very common in every formation of sandstone. The features, which indicate the eyes and the mouth, are evidently traced by means of some metallic tool; we may suppose, that they were added by the Peruvian priests, in order to impose more readily on the people. On the arrival of the Spaniards, the missionaries were highly interested in withdrawing from the eyes of the natives whatever was the object of ancient veneration; and we still find traces of the chisel employed in effacing the image of the Sun.

According to the interesting researches of Mr. Vater, the word *Inti*, Sun, offers no analogy with any known idiom of the Old Continent. In general, out of eighty-three American languages examined by this respectable writer, and by Dr. Barton of Philadelphia, we have hitherto recognised but one hundred and thirty-seven roots, which were found in the languages of Asia and Europe; namely, in those of the Mantchou Tartars, the Monguls, the Celts, the Biscayans, and the Esthonians. This curious result seems to prove what we have already advanced in speaking of the mythology of the Mexicans. It cannot be doubted, that the greater part of the nations of America belong to a race of men,

who, isolated ever since the infancy of the world from the rest of mankind, exhibit in the nature and diversity of language, in their features and the conformation of their skull, incontestable proofs of an early and complete separation.

YNGA-CHUNGANA,

NEAR CANNAR.

PLATE XIX.

To the north of the ruins of Cannar rises a chain of hills, the slope of which toward the house of the Inca is very gentle, while it is almost perpendicular on the side of the valley of Gulan. According to the traditions among the natives, this hill formed part of the gardens, that surrounded the ancient Peruvian fortress. We here found, as near the *ravine of the Sun*, a great number of small pathways cut on the slope of a rock, which is scarcely covered with vegetable mould.

Near Mexico, in the gardens of Chapoltepec, the European traveller views with melancholy feeling cypress trees *, the trunks of which are more than sixteen metres in circumference; and

* Cupressus disticha, L.

which are thought, with some probability, to have been planted by kings of the Azteck dynasty. In the gardens of the Inca, near Cannar, we sought in vain for some tree, which might seem to have outlived half a century; nothing indicates the abode of the Incas in these countries, except perhaps a small monument of stone, placed on the brink of a precipice, and on the purpose of which the inhabitants are not agreed.

This small monument, which is called the *Sport of the Inca*, consists in a single mass of stones. The Peruvians employed in its construction the same artifice as the Egyptians did in the sculpture of the sphynx of Geeza, of which Pliny expressly says, "*e saxo naturali elaborata.*" The rock of quartzose sandstone, which serves as its basis, was diminished, so that, after having taken away the strata which formed the summit, there remained only a seat with an enclosure around, which is represented on this plate. We may be surprised, that a people who heaped together so prodigious a number of freestones on the superb causeway of Assuay, should have recourse to such singular means to raise a wall three feet high. All the Peruvian works bear the mark of a laborious people, who delighted in hollowing rocks, and in seeking difficulties to show their address in conquering them; and who imprinted on the most insignificant edifices a character of solidity, from which we

might be led to think, that at some other epocha they could have raised monuments far more considerable.

The *Inga-Chungana*, at a distance, resembles a sofa, the back of which is decorated with a sort of arabesque in form of a chain. On entering the oval enclosure, we perceive, that there is no seat but for one person; but that this person is placed in a commodious manner, so as to enjoy the most delightful prospect over the valley of Gulan. A small river winds along this valley, and forms several cascades, the foam of which is seen through tufts of gunnera and melastomas. This rustic seat would be an ornament to the gardens of Richmond or Ermenonville; and the prince, who had chosen this site, was not insensible to the beauties of nature; he belonged to a people, whom we have no right to style barbarous.

I beheld in this fabric only a seat placed in a delightful spot, at the brink of a precipice, on the steep declivity of a hill that commands the valley: some old Indians, who are the historians of the country, find this explanation too simple; they assert, that the hollow sculptured chain on the edge of the enclosure was formed to receive little balls, which were rolled along it for the amusement of the prince. We must admit, that the edge, on which is the Arabesque, has some slope; and that the ball, at the place where the

wall is perceptibly lower, might have mounted, as much as it had descended, if thrown with sufficient force: but were this supposition true, should we not find at the end of the chain some hole, to receive the balls when their course was finished? The place where the wall of the enclosure is the lowest, the point opposite the seat, corresponds to an opening in the rock on the brink of the precipice. A narrow pathway, cut in the sandstone, leads to this grotto, in which, according to the tradition among the natives, there are treasures hidden by Atahualpa. They say too, that a streamlet formerly ran along this pathway. Is it there that we should look for the *Sport of the Inca?* and was this enclosure so situate, that the prince could conveniently see what passed on the steep declivity of the rock? We shall speak more of this grotto in the narrative of our journey to Peru.

INTERIOR

OF THE

House of the Inca at Cannar.

PLATE XX.

THIS plate represents the plan and inside of the small building, which occupies the centre of the esplanade in the citadel of Cannar, and which M. La Condamine thought destined for a guard-house. I sketched this drawing with the greater exactness, because the remains of Peruvian architecture scattered along the ridge of the Cordilleras, from Cuzco to Cayambé, or from the thirteenth degree of north latitude to the equator, all bear the same character in the cut of the stones, the shape of the doors, the symmetrical disposal of the niches, and the total absence of exterior ornaments. This uniformity of construction is so great, that all the stations *(tambos)* along the high roads, called, in the country, houses or palaces of the Inca, appear to have been copied from each other. Peruvian archi-

tecture was limited to the wants of a nation of mountaineers; it had neither columns, nor pilasters, nor circular arches: these natives of a rocky country, of elevated plains almost destitute of trees, were not led, like the Greeks and Romans, to imitate in their architecture the assemblage of a construction in wood; simplicity, symmetry, and solidity, were the three characters, by which all Peruvian edifices were distinguished.

The citadel of Cannar, and the square buildings surrounding it, are not constructed with the same quartzose sandstone, which covers the primitive slate and the porphyries of Assuay, and which appears at the surface in the garden of the Inca, as we descend toward the valley of Gulan. Neither are the stones used for the edifices of Cannar granite, as M. de la Condamine thought, but a trappean porphyry of great hardness, enclosing vitreous feldspar and hornblende. This porphyry was perhaps dug in the great quarries, which are found at four thousand metres of height near the lake of Culebrilla, more than three leagues distant from Cannar. It is certain at least, that these quarries furnished the fine stone employed in the house of the Inca, situate in the plain of Pullal, at an elevation almost equal to that of the Puy de Dome if placed on the summit of Canigou.

We do not find in the ruins of Cannar those

stones of enormous size, which we see in the Peruvian edifices of Cuzco and the neighbouring countries. Acosta measured some at Traquanaco, which were twelve metres (thirty-eight feet) long, five metres eight tenths (eighteen feet) broad, and one metre nine tenths (six feet) thick. Pedro Cieça of Leon saw some of the same dimensions in the ruins of Tiahuanaco *. In the citadel of Cannar I saw no stones that exceeded twenty-six decimetres (eight feet) in length. They are in general much less remarkable for their bulk, than the extreme beauty of their shape; the greater part are joined without any appearance of cement. We nevertheless recognise cement in some of the buildings surrounding the citadel, and in the three houses of the Inca at Pullal, each of which is more than fifty-eight metres long. This cement is formed of a mixture of small stones and argillaceous marl, which effervesces with acids; it is a true mortar, of which I detached considerable portions with a knife, by digging into the interstices which were left between the parallel courses of the stones. This fact deserves some attention; because the travellers who preceded us have all asserted, that the Peruvians were unacquainted with the use of mortar; but the supposition, that the Peruvians were as ignorant in this point

* Cieça, Chronica del Perù (Anvers, 1554), p. 254.

as the ancient inhabitants of Egypt, is erroneous. The Peruvians not only employed a marly mortar in the great edifices of Pacaritambo*, but made use of a cement of asphaltum *(betun)*; a mode of construction, which on the banks of the Euphrates and the Tigris may be traced back to the remotest antiquity.

The porphyry made use of for the buildings of Cannar is cut into parallelopipedons with such perfection, that the joints of the stone would be imperceptible, as M. de la Condamine remarks, if their exterior surface were a plane; but the outer surface of each stone is slightly convex, and cut slantingly towards the edge; so that the joints form small flutings, which serve as ornaments, like the separations of the stones in rustic work. This cut of the stone, which the Italian architects call *bugnato*, is found in the ruins of Callo, near Mulalo, where I have sketched it in detail†: it gives the walls of the Peruvian buildings a great resemblance to certain Roman structures, for instance, to the *muro di Nerva* at Rome.

What chiefly characterizes the monuments of Peruvian architecture is the form of the doors, which are generally nineteen or twenty decimetres (six or eight feet) high, so that the Inca,

* Cieça, Chronica del Peru (Anvers, 1554), 234.

† See pl. 24, (9 of the edition in 8vo).

or great nobles might pass, though carried in a palanquin on the shoulders of their subjects. The door-posts were not parallel, but inclined, probably in order to use stone lintels of less dimensions. The niches *(hoco)* hollowed in the walls, and serving for cupboards, imitate the form of these *porte rastremate:* the inclined position of these parts in the Peruvian edifices gives them some resemblance to those of Egypt, in which the lintels are always shorter than the thresholds. Between the hocoes are cylindric stones, with polished surfaces, which project out of the wall to the length of five decimetres; the natives assured us, that they were used to hang weapons or ornaments on. We observed also in the corners of the walls cross pieces of porphyry of a singular shape. M. de la Condamine thinks, that they were intended to join the two walls. I am rather inclined to believe, that the cords of their hammocks were fastened round these cross pieces; at least we find similar pieces of wood, serving for this purpose, in all the huts of the Indians of the Orinoco.

The Peruvians showed surprising dexterity in cutting the hardest stones. At Cannar we find curved grooves hollowed in the porphyry, to supply the want of hinges to the doors. La Condamine and Bouguer saw in old edifices, built in the time of the Incas, ornaments of porphyry, representing the muzzles of animals, in

the perforated nostrils of which were moveable rings of the same stone*. When I crossed the Cordilleras by the Paramo of Assuay, and saw the enormous masses of stone extracted from the porphyry quarries of Pullal, employed in constructing the high roads of the Inca, I already began to doubt, whether the Peruvians were not acquainted with other tools beside hatchets of flint; I suspected, that grinding was not the only method they had employed to smooth the stones, or give them a regular and uniform convexity; and I then adopted an opinion contrary to the ideas generally received; I conjectured, that the Peruvians had tools of copper, which mixed with a certain proportion of tin acquires considerable hardness. This conjecture has been justified by the discovery of an ancient Peruvian chisel, found at Vilcabamba, near Cuzco, in a silver mine worked in the time of the Incas. This valuable instrument, for which I am indebted to the friendship of P. Narcissus Gilbar, and which I have brought to Europe, is twelve centimetres long and two broad. The metal of which it is composed has been analyzed by Mr. Vauquelin, who found in it 0·94 of copper, and 0·06 of tin. This *keen copper* of the Peruvians is almost identical with that of the

* Mémoires de l'Académie de Berlin, 1746, p. 452, lib. 7, f. 4.

Gallic axes, which cut wood as if they had been of steel*. Every where in the Old Continent, at the beginning of the civilization of nations, the use of copper mixed with tin (χαλκος) prevailed over that of iron, even in places where the latter had been for a long time known.

* See my Political Essay on New Spain, vol. 3, p. 306, edition in 8vo.

AZTECK BAS-RELIEF,

FOUND IN THE

GREAT SQUARE OF MEXICO.

PLATE XXI.

THE cathedral of Mexico, represented in the third plate, is built on the ruins of the *teocalli*, or *house of the god* Mexitli. This pyramidal monument, constructed by king Ahuizotl, in 1486, was thirty-seven metres high from its basis to the upper platform, whence there is an extensive view over the lakes, the surrounding country strown with villages, and the mountains that skirt the valley. The platform, which served as an asylum in battle, was crowned by two chapels in the form of towers, each of which was seventeen or eighteen metres, so that the whole teocalli was fifty-four metres high. The heap of stones, that formed the pyramid of Mexitli, was used after the siege of Tenochtitlan, to raise the *Plaza Mayor*. In digging eight or ten metres deep, a great number of colossal idols, and other

remains of Azteck sculpture, were discovered: in fact, three curious monuments, of which we shall give a description in this work, the *stone of sacrifices*, the colossal statue of the goddess *Teoyaomiqui*, and the *stone of the Mexican calendar*, were found, when the Viceroy, Count Revillagigedo, levelled the great square of Mexico, by lowering the ground. A very credible person, who had been commissioned to direct these works, assured me, that the foundations of the cathedral are surrounded by an immense quantity of idols and reliefs; and that the three masses of porphyry, which we have just mentioned, are the smallest of those discovered in digging to the depth of twelve metres. Near the *capilla del sagrario* a sculptured rock was discovered, which was seven metres long, six broad, and three in height; the workmen, finding that they could not get it out, were about to break it in pieces; but happily they were diverted from their intention by a canon of the cathedral, Mr. Gamboa, an enlightened friend of the arts.

The stone, which is commonly known by the name of the stone of sacrifices *(piedra de los sacrificios)*, is of cylindrical form: it is 3 metres broad, and 11 decimetres in height; it is surrounded with a relief, in which we find twenty groups of two figures, all represented in the same attitudes. One of these figures is constantly the

same: it is a warrior, perhaps a king, who has his right hand resting on the helmet of a man, who is offering him flowers as a mark of obedience. Mr. Dupé, whom I had occasion to mention at the beginning of this work, has copied the whole relief; I convinced myself on the spot of the exactness of his drawing, a part of which is engraven on the plate; and I have chosen the remarkable group, which represents a bearded man. It is observable, that in general the Mexican Indians have somewhat more beard than the rest of the natives of America; it is not rare even to see some with mustaches. Was there ever formerly a province, the inhabitants of which wore a long beard? Or is that which we see in the relief artificial? and is it a part of those fantastic ornaments, by which warriors sought to inspire their enemies with terror?

Mr. Dupé's opinion seems to me well-founded, that this sculpture represents the conquests of an Azteck king. The conqueror is always the same, the vanquished warrior wears the dress of the nation to which he belongs, and of which he may be said to be the representative. Behind the prisoner is placed the hieroglyphic, that denotes the conquered province. In the collection of Mendoza, the conquests of a king are in the same manner indicated by a buckler, or bundle of arrows, placed between the king and the symbolical characters or arms of the subjected

countries. As the Mexican prisoners were offered up in the temples, it would appear natural enough, that the triumphs of a warrior king should be figured around the fatal stone, on which the *topiltzin* (the sacrificing priest) tore out the heart of the unhappy victim. What has caused this hypothesis to be adopted is, that the upper surface of the stone has a groove of some depth, which appears to have been cut to let the blood run off.

Notwithstanding these apparent proofs, I am inclined to think, that the *stone of the sacrifices* was never placed at the top of a *teocalli;* but was one of those stones, called *temalacatl,* on which the *combat of the gladiators* took place between the prisoner destined to be sacrificed and a Mexican warrior. The real stone of sacrifices, that which crowned the platform of the teocalli, was green, either jasper, or perhaps jade*; its form was that of a parallelopipedon, fifteen or sixteen decimetres in length, and a metre in breadth; its surface was convex, so that the victim stretched upon the stone had the breast raised higher than the rest of his body. No historian states, that this block of green stone was sculptured; the great hardness of the rocks of jasper and jade no doubt formed an obstacle to the execution of a bass-relief. On com-

* Beilstein of Werner.

paring the cylindric block of porphyry found in the great square of Mexico, with those oblong stones, on which the victim was thrown when the topiltzin approached, armed with a knife of obsidian, we easily conceive, that these two objects offer no resemblance either in matter or in form.

It is easy, on the contrary, to recognise, in the description which ocular witnesses have given of the *temalacatl,* the stone on which the prisoner destined for sacrifice fought, that of which Mr. Dupé has sketched the relief. The unknown author of the work published by Ramusio, under the title of *Relazione d'un Gentiluomo di Fernando Cortez,* expressly says, that the temalacatl had the form of a mill-stone, was three feet thick, had figures sculptured round it, and was large enough to serve for a combat between two persons. This cylindrical stone was placed on a platform raised three metres in height. The prisoners most distinguished for their courage or their rank were reserved for the *sacrifice of the gladiators.* Placed on the temalacatl, surrounded by an immense crowd of spectators, they were to fight six Mexican warriors in succession; if they were fortunate enough to conquer them, their liberty was granted them, and they were permitted to return to their own country; if, on the contrary, the prisoner sunk under the strokes of one of his adversaries, a priest,

called *chalchiuhtepehua*, dragged him dead or living to the altar, and tore out his heart.

It is possible, that the stone, which was found in digging round the cathedral, was the same temalacatl, which the *gentiluomo* of Cortez asserts having seen near the enclosure of the great teocalli of Mexitli. The figures of the relief are nearly sixty decimetres high. Their shoes are very remarkable: the conqueror has his left foot terminated by a kind of beak, which appears to be a defensive weapon. We may be surprised at finding this weapon, to which I know of nothing analogous among other nations, only on the left foot. This same figure, the stunted body of which reminds us of the earliest Etruscan style, holds the prisoner by the helmet, grasping it with his left hand. In a great number of Mexican paintings, which represent battles, we see warriors holding their weapons in the left hand: they are represented acting rather with this hand than with the right. We might be led to think at first sight, that this singularity is the result of peculiar habits; but, on examining a great number of historical hieroglyphics of the Mexicans, we observe, that their painters placed weapons sometimes in the right, and at other times in the left hand *, as it happened to produce a symmetrical disposition in

* Cod. Vat. anon. fol. 86.

the groups; I found several striking examples in looking through the *Codex Anonymus* of the Vatican, in which we found Spaniards holding the sword in the left hand. This singularity of confounding the right with the left is also characteristic of the beginning of the art; we observe the same in some Egyptian reliefs; we even find in the latter right hands fastened to left arms, whence it results, that the thumb seems placed on the outside of the hand. Learned antiquaries have been induced to think, that there was something mysterious in this extraordinary arrangement, which Mr. Zoega attributes only to mere caprice, or the negligence of the artist.

I much doubt, whether this bass-relief, which encircles the *temalacatl*, and so many other sculptures in basaltic porphyry, were executed by employing only tools of jade, or other very hard stones. It is true, that I have sought in vain to procure some metallic chisel of the ancient Mexicans, like that I brought from Peru: but Antonio de Herera, in the tenth book of his History of the West Indies, says expressly, that the inhabitants of the maritime province of Zacatollan, situate between Acapulco and Calima, prepared two sorts of copper, of which one was hard or cutting, and the other malleable; the *hard copper* was used to fabricate hatchets, weapons, and instruments of agriculture; the malleable copper was employed for vases, caldrons, and other ne-

cessary utensils in domestic use. Now, the country of Zacatollan having been subjected by the kings of Anahuac, it does not appear probable, that in the environs of the capital of the kingdom they continued to engrave stones by grinding, if metallic chisels could be procured. This hard Mexican copper was no doubt alloyed with tin, in the same manner as the tool found at Vilcabamba, and that Peruvian hatchet, which Godin sent to M. de Maurepas, and which Count Caylus thought was *tempered copper*.

BASALTIC ROCKS

AND

CASCADE OF REGLA.

PLATE XXII.

In changing our latitude and climate, we see a change in the aspect of organic nature, in the form of animals and of plants, which impresses a peculiar character on every zone. With the exception of some aquatic and cryptogamous vegetables, the soil in every region is covered with different plants. It is not so with inanimate nature, with that aggregation of earthy substances, which covers the surface of our planet; the same decomposed granite, on which, amid the frosts of Lapland, the vacciniums, the andromedas, and the moss that nourishes the reindeer, vegetate, is found again in those bowers of fern-trees, of palms, and of heliconia, the shining foliage of which unfolds itself under the influence of the equatorial heats. When at the end of a long voyage, after passing from one

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Cascade of Regla, near Mexico.

Pub.d by Longman, Hurst, Rees, Orme & Brown Aug.t 1814

hemisphere to another, the inhabitant of the north lands on some distant shore, he is surprised to find, amid a crowd of unknown productions, those strata of slate, micaceous schist, and trappean porphyry, that form the arid coasts of the Old Continent bathed by the icy ocean. Under every climate the rocky crust of the Globe presents the same appearance to the traveller; he every where finds, and not without emotion, in the midst of a New World, the rocks of his native country.

This analogy in unorganized nature extends even to those little phenomena, which we should be tempted to attribute to causes merely local. In the Cordilleras, as well as in the mountains of Europe, granite sometimes offers aggregations in the form of spheroids flattened and divided into concentric layers: under the tropics as well as in the temperate zone, we find in the granite some of those masses abounding in mica and hornblende, which resemble blackish balls enclosed in a mixture of feldspar and milky quartz; schillerspar is found in the serpentines of the isle of Cuba, as well as in those of Germany; the mandelstein and perlstein of the elevated plain of Mexico appear identic with those seen at the foot of the Carpathian mountains. The superposition of the secondary rocks follows the same laws in regions the most remote from each

other. In every place the same appearances attest the same order in the revolutions, which have progressively changed the surface of the Globe.

If we go back to physical causes, we ought to be less surprised at finding, that travellers have discovered no new rocks in distant regions. The climate has an influence on the form of animals and of plants, because the play of affinities, which presides over the unfolding of the organs, is modified both by the temperature of the atmosphere, and by that which results from the different combinations formed by chemical action; but the unequal distribution of heat, which is the effect of the obliquity of the ecliptic, could have had no sensible influence on the formation of the rocks; this formation, on the contrary, must itself have had a powerful influence on the temperature of the Globe, and the surrounding air. When great masses of matter pass from a liquid to a solid state, this phenomenon cannot take place without being accompanied by an enormous evolution of caloric. These considerations seem to throw some light on the first migrations of animals and of plants. I might be tempted to explain by this progressive elevation of temperature several important problems, particularly that which the existence of the productions of the In-

dies buried in the countries of the north exhibits, were I not afraid of increasing the number of geological dreams."

The basalts of Regla, sketched on this plate, offer an undeniable proof of that identity of form, which is observed among the rocks of different climates. The mineralogical traveller, who casts a look over this drawing, finds in it the form of the basalts of the Vivarais, of the Euganean mountains, or of the promontory of Antrim in Ireland. The slightest circumstances observable in the columnar rocks of Europe are perceived in this group of the basalts of Mexico. So great an analogy of structure leads us to suppose, that the same causes have acted under every climate, and at very different epochas; for the basalts covered with thonschiefer and compact limestone must be of a very different age from those, that repose on strata of coal and pebbles.

The cascade of Regla is to the north-east of Mexico, at a distance of twenty-five leagues, between the celebrated mines of Real del Monte, and the thermal waters of Totonilco. A small river, which moves the wheel of the mill for amalgamation at Regla, the construction of which cost more than ten millions of livres, forces its way across the groups of basaltic columns; the sheet of water that rushes down is considerable, but the fall is not above

seven or eight metres. The surrounding rocks, which remind us of the cave of Fingal, at Staffa, in the Hebrides; the contrasts of vegetation, the wild appearance, and the solitude of the place, render this small cascade extremely picturesque. On both sides of the ravine the basaltic columns rise to more than thirty metres in height, and on them grow tufts of cactus and yucca filamentosa. The prisms have generally five or six sides, and are sometimes as much as twelve decimetres in breadth; several present very regular articulations. Each column has a cylindrical nucleus, of a denser mass than the surrounding parts; these nuclei are as it were enchased in the prisms, which in their horizontal fracture offer very remarkable convexities. This structure, which is also found in the basalts of Fairhead, I have shown in the foreground of the drawing toward the left.

The greater part of the columns of Regla are perpendicular; though some very near the cascade, have forty-five degrees of inclination toward the east; and farther on there are others horizontal. Each group, at the time of its formation, appears to have followed particular attractions. The mass of these basalts is very homogeneous. Mr. Bonpland remarked in them nuclei of olivine or granuliform peridot, surrounded with mesotype-zeolite. The prisms, and this fact deserves the attention of geologists, re-

pose on a bed of clay, under which is again found basalt. In general that of Regla is superposed on the porphyry of Real del Monte, while a floetz limestone serves as a basis to the basalt of Totonilco. The whole of this basaltic region is two thousand metres above the level of the ocean.

RELIEF IN BASALT,

REPRESENTING THE

Mexican Calendar.

PLATE XXIII.

AMONG the number of monuments which seem to prove, that the people of Mexico, at the time of their conquest by the Spaniards, had attained a certain degree of civilization, we may assign the first rank to the calendars, or different divisions of time, adopted by the Toltecks and the Aztecks; either for the use of society in general, or to regulate the order of sacrifices, or to facilitate the calculations of astrology. This kind of monument is so much the more worthy of fixing our attention, as it is a proof of knowledge, which we have some difficulty in considering as the result of observations made by a nation of mountaineers, in the uncultivated regions of the New Continent. We might be tempted to compare the circumstance of the Azteck calendar,

Mexican Calendar in Relief on Basalt.

with that of those languages rich in words, and in grammatical forms, which we find among nations, whose actual mass of ideas is not correspondent to the multiplicity of signs adapted to explain them. Those languages so rich and flexible, those modes of intercalation which suppose an accurate knowledge of the duration of the astronomical year, are perhaps only the remains of an inheritance, transmitted to them by nations heretofore civilized, but since relapsed into barbarism.

The monks and other Spanish writers, who visited Mexico a short time after the conquest, gave but vague and often contradictory notions of the different calendars in use among the nations of the Tolteck and Azteck race. We find these notions in the works of Gomara, Valades, Acosta, and Torquemada. This last writer, notwithstanding his superstition, has transmitted to us in his *Monarquia Indiana* a collection of important facts, which discovers an accurate knowledge of local circumstances. He lived fifty years among the Mexicans: he arrived at the city of Tenochtitlan at a period, when the natives were yet in possession of a great number of historical paintings; and when, before the house of the Marquis del Valle*, in the Plaza Mayor, were

* See page 7, plate 3d, folio edition.

seen the remains of the great teocalli* dedicated to the god Huitzilopochtli. Torquemada made use of the manuscripts of three Franciscan monks, Bernardino de Sahagun, Andrea de Olmos, and Toribio de Benavente, who were very intimately acquainted with the American languages, and who went to New-Spain in the time of Cortez, before the year 1528. Notwithstanding these advantages, the historian of Mexico has not furnished us with all the information respecting the chronology and calendars of the Mexicans, that we might have expected from his zeal and his instruction. He expresses himself with so little precision, that we read in his work, that the year of the Aztecks finished at the month of December, and began at the month of February †.

Materials more instructive than the narratives of the first Spanish historians, had long existed at Mexico, in the convents and public libraries. Some Indian authors, Christoval del Castillo, a native of Tezcuco, who died in 1606, at the age of eighty years, Fernando de Alvarado Tezozomoc, and Domingo Chimalpain, have left manuscripts composed in the Azteck language on the

* The year 1577. Torquemada, lib. viii, c. 2. (vol. 2, p. 157.)

† Ibid. lib. 10, cap. 10, 33, 34, and 36.

history and chronology of their ancestors. These manuscripts, which contain a great number of dates, reckoning at the same time according to the Christian era, and according to the civil and ritual calendar of the natives, have been studied with advantage by the learned Carlos de Siguenza, professor of mathematics at the university of Mexico: by the Milanese traveller, Boturini Benaducci; by the Abbé Clavigero; and latterly by Mr. Gama, whose astronomical labours I have had occasion to mention in another work*. Finally, in 1790, a stone of enormous bulk, covered with characters evidently relative to the Mexican calendar, the religious festivals, and the days in which the Sun passes the zenith of the city of Mexico, was discovered in the foundations of the ancient teocalli. This served at the same time to clear up some doubtful points, and call the attention of some enlightened natives to the Mexican calendar.

I endeavoured, not only during my stay in America, but after my return to Europe, to study carefully every thing that has been published on the division of time, and the mode of intercalation among the Aztecks. I examined on the spot the celebrated stone found in the Plaza Mayor, and represented in the twenty-third

* Essai polit. sur le Mexique, vol. 2, p. 24, de l'edition in 8vo.

plate: I have drawn some not uninteresting notions from the hieroglyphic paintings preserved in the convent of San Felipe Neri at Mexico: and I perused at Rome the manuscript commentary, which P. Fabrega composed on the Codex Mexicanus of Veletri: but I greatly regret, that I am not sufficiently versed in the Mexican language, to read the works written by the natives in their own tongue, and in the Roman alphabet, immediately after the taking of Tenochtitlan. Consequently I have not been able to verify the whole of the assertions of Siguenza, Boturini, Clavigero, and Gama, on the Mexican intercalation, by comparing them with the manuscripts of Chimalpain and of Tezozomoc, whence those authors assure us they derived the notions which they have published. Whatever be the doubts which remain on several points in the minds of the learned, habituated to scrutinize every fact, and adopt only what is rigorously proved, I am happy to have excited attention to a curious monument of Mexican sculpture, and to have given some new particulars respecting a calendar, which neither Robertson nor the illustrious author of the History of Astronomy appears to have treated with all the consideration it deserves. This calendar will be rendered still more interesting by the ideas we shall furnish relative to the Mexican tradition of the *four ages*, or four Suns, which exhibit

remarkable analogies with the *yougs* and the *calpas* of the Hindoos; and on the ingenious method employed by the Muysca Indians, a nation of mountaineers of New Grenada, to correct their lunar years by the intercalation of a thirty-seventh moon, called *deaf* or *cuhupqua*. It is by collecting and comparing the different systems of American chronology, that we can judge of the communications, which appear to have existed, in very remote times, between the nations of India and Tartary, and those of the New Continent.

The civil year of the Aztecks was a solar year of three hundred and sixty-five days, and was divided into eighteen months, each of twenty days. After these eighteen months, or three hundred and sixty days, five complementary days were added, and the year began anew. The names of *Tonalpohualli* or *Cempohualilhuitl*, which distinguished this civil calendar from the ritual calendar, sufficiently indicated its principal characters. The first of these names signifies *reckoning of the Sun*, in opposition to the ritual calendar, called *reckoning of the Moon*, or *Metzlapohualli*: the second denomination is derived from *cempohualli*, twenty, and *ilhuitl*, festival; and it alludes, either to the twenty days contained in each month, or the twenty solemn festivals celebrated during the course of a civil year, in the teocallis, or *houses of the gods*.

The beginning of the civil day among the Aztecks was reckoned like that of the Persians, the Egyptians*, the Babylonians, and the greater part of the nations of Asia, except the Chinese, from sunrising. It was divided into eight intervals, a division found among the Hindoos † and the Romans; four of which were determined by the rising of the Sun, its setting, and its two passages across the meridian. The rising was called *yquiza tonatiuh;* noon, *nepantla tonatiuh;* the setting, *onaqui tonatiuh;* and midnight, *yohualnepantla.* The hieroglyphic of the day was a circle divided into four parts. Although, under the parallel of the city of Mexico, the length of the day does not vary more than two hours twenty-one minutes, it is very certain, that the Mexican hours were originally unequal, like the *planetary hours* of the Jews, and all those which the Greek astronomers noted under the name of καιρικαι in opposition to the ισημεριναι, *equinoxial hours.*

The epochas of the day and the night which correspond nearly to our hours 3, 9, 15, and 21, astronomical time, had no particular names. The Mexicans, to denote them, pointed, as our labourers do, to the place of the sky where the

* Ideler, Hist. Unters. ueber die astr. Beob. der Alten, p. 26.

† Bailly, Hist. de l'Astr. anc. p. 296.

Sun would be in following its course from east to west; this gesture was accompanied by these remarkable words; *iz Teotl, there god will be;* an expression which recalls that happy period, when the people emigrated from Aztlan knew yet no other divinity than the Sun, and were addicted to no sanguinary rite *.

Each Mexican month of twenty days was subdivided into four small periods of five days. At the beginning of these periods every commune kept its fair, *tianguiztli.* The Muyscas, a nation of South America, had weeks of three days. It appears, that no nation of the New Continent was acquainted with the week, or cycle of seven days, which we find among the Hindoos, the Chinese, the Assyrians, and the Egyptians, and which, as Le Gentil † has very justly observed, is followed by the greater part of the nations of the Old World.

A passage in the history of the Incas by Garcilasso, induced M. M. Bailly ‡ and Lalande to think, that the Peruvians reckoned by cycles of seven days. "The Peruvians," says Garcilasso, "reckon the months by the Moon; they reckon the half months by the increas-

* See above, p. 216.

† Le Gentil, Hist. de l'Acad. 1772, Tom. ii, p. 207, 209. La Place, Expos. du Système du Monde, p. 272.

‡ Bailly, Hist. de l'Astron. Liv. 5, § 17, p. 408. Lalande, Astron, § 1534.

ing and waning of the Moon; they reckon the weeks by the quarters, without having particular names for the days of the week." But Acosta, better informed than Garcilasso; and who, toward the end of the sixteenth century, composed at Peru the first books of his Physical Geography of the New Continent; says clearly, that neither the Mexicans, nor the Peruvians, were acquainted with the small period of seven days; "for this period," adds he, "does not depend more on the course of the Moon, than on that of the Sun. It owes its origin to the number of the planets *."

If we reflect an instant on the system of the Peruvian calendar, we shall be aware, that, though the phases of the Moon change nearly every seven days, this cycle of seven days does not correspond with any accuracy to the phases of the Moon in several consecutive lunar months. The Peruvians, according to Polo, and all the writers of those times, had years *(huata)* of 365 days, regulated, as we shall see farther on, by solar observations made month after month at the city of Cuzco. The Peruvian year was divided, as were almost all the years of the nations of Eastern Asia, into twelve Moons, *quilla*, the synodical revolutions of which finished in 354 days,

* Acosta, Historia natural y moral de las Indias. Lib. 6, C. 3, ed. of Barcelona, 1591, p. 260.

eight hours, forty-eight minutes. To correct the lunar year, and make it coincide with the solar year, eleven days, according to ancient custom, were added; which, by the edict of the Inca, were divided among the twelve moons. According to this arrangement, it was scarcely possible, that four equal periods, into which the lunar months should be divided, could be seven days each, and correspond to the phases of the Moon. The same historian, whose testimony is cited by M. Bailly in favor of the opinion, that the week of the Hindoos was known to the Americans, affirms, that, according to an ancient law of the Inca Pachacutec, there ought to be in each lunar month three days for festivals and for markets *(catu)*; and that the people were to work, not seven, but eight consecutive days, and rest the ninth *. This is undoubtedly a division of a lunar month, or a sideral revolution of the Moon, into three small periods of nine days.

We shall observe, on this occasion, that the Japanese †, a nation of the Tartar race, are equally unacquainted with the small period of seven days; while it is in use among the Chinese, who seem also aborigenes of the elevated plain of

* Garcilasso, Lib. 6, C. 35, Tom. 1, p. 216.

† Voyage de Thunberg au Japon, p. 317.

Tartary, but who have long had intimate communications with Hindostan * and Thibet.

We have seen above, that the Mexican year presented, like that of the Egyptians and the *new French calendar*, the advantage of a division into months of equal duration. The five complementary days, the epagomenes (επαγόμεναι) of the Egyptians, were denoted among the Mexicans by the name of *nemontemi* or *voids*. We shall see presently the origin of this denomination; it is sufficient here to observe, that the children born during the five complementary days were regarded as unfortunate, and were called *nemoquichtli* or *nencihuatl*, *unhappy men or women;* in order that, as is stated by the Mexican writers, these very names should call to their remembrance, in every event of life, how little they ought to trust to their stars.

Thirteen Mexican years formed a cycle, called *tlalpilli*, analogous to the indiction of the Romans. Four tlalpilli formed a period of 52 years, or *xiuhmolpilli*, *ligature* of the years: finally, two of these periods of 52 years formed an old age, *cehuehuetiliztli*. To express myself more clearly, I shall call, with several Spanish writers, the *ligature* half a century, and *old age* a century.

* Sir William Jones, in the Asiatic Researches, vol. 1, p. 420.

The hieroglyphic of the half century is conformable to the figurative signification of the word; it is a bundle of reeds tied by a riband. A half century *(xiuhmolpilli)* was considered by the Mexicans as a *great year;* and this denomination, no doubt, induced Gomara*, to call the indictions, or the four cycles of thirteen years, great weeks, *las semanas del anno.*

The idea of denoting a period by a word, which calls to mind a *bundle* of years or Moons, is found among the Peruvians. In the *Qquichua* language, *lingua del Inga*, a year of 365 days is called *huata;* a word evidently derived from *huatani*, to tie, or *huatanan*, a rope of rushes. The Aztecks had no hieroglyphic for the *old age*, or century of 104 years, the name of which indicates, as we may say, the term of life of aged persons.

In resuming what we have just stated on the division of time, we find, that the Mexicans had small periods of five days (half decads), months of twenty days, civil years of 18 months, indictions of 13 years, half centuries of 52 years, and centuries, or *old ages*, of 104 years.

According to the curious researches of Mr. Gama, it appears certain, that, at the close of a cycle of 52 years, the civil year of the Toltecks and the Aztecks, like that of the Chinese and the

* Gomara, Conquista de Mexico, 1553, fol. 118.

Hindoos, finished at the winter solstice; "when," as the first missionary monks sent to Mexico with simplicity say, "the Sun, in his annual course, begins again his labours, *quando desanda lo andado.*" This same beginning of the year is found among the Peruvians, whose calendar, in other respects, sufficiently indicates, that they are not descended from the Toltecks, as several writers have gratuitously supposed *. The inhabitants of Cuzco preserved a tradition †, according to which the first day of the year corresponded formerly to our first of January, till the Inca Titu-Manco-Capac, who took the surname of Pachacutec *(reformer of time)*, ordered, that, when the Sun trod back his steps, that is at the winter solstice, the year should begin.

A great confusion exists among the Spanish writers on the denomination and the series of the 18 Mexican months. Several of these months had three or four names; and some authors, forgetting that the Mexicans, when they had to represent a periodical series of signs, or hieroglyphics, wrote from right to left, and began at the bottom of the page, have taken the last month

* See page 173, and my Essay on the primitive Population of America. Berlin. Monatschrift, 1806. Merz. p. 177, 208.

† Acosta, p. 260.

for the first. The Aztecks united in what they called *wheels* of the half century, *xiuhmolpilli*, the series of hieroglyphics, that denote the cycle of 52 years. A serpent, with its tail in its mouth, forming a circle, surrounds the wheel, and denotes, by four knots, the four indictions, or *tlalpilli*. This emblem reminds us of the serpent, or dragon, which, among the Egyptians and the Persians *, represents the century, a revolution, *ævum*. In this wheel of fifty-two years, the head of the serpent denotes the beginning of the cycle. It is not so with the *wheel of the year*; the serpent there does not encircle the 18 hieroglyphics of the months, and nothing in it characterizes the first month of the year.

The memoir which Mr. Gama published at Mexico on the Azteck almanack being very scarce in Europe, I shall insert here the series of the months, according to the laborious investigations of this distinguished writer. I shall add the etymology of the denominations, all of which relate to the festivals, public works, and the climate of Mexico. We cannot doubt, but that *Titítl* was the first month, the Indian Christoval del Castillo expressly stating in his manuscript history, that the *nemontemi*, or complementary

* Bailly, p. 515.

days, were added at the end of the month *Atemoztli*. The following are the names of the 18 months.

1. *Titil*, perhaps from *titixia*, to glean after the harvest; *Itzcalli*, month destined to renew and whiten the insides of houses and temples. From the 9th to the 28th of January, in the first year of the first indiction of the cycle *Xiuhmolpilli*.

2. *Xochilhuitl*, from the 29th of January, to the 17th of February.

3. *Xilomanaliztli*; *Atlcahualco*, which wants water or rain; *Quahuitlehua*, month in which the trees begin to bud; *Cihuailhuitl*, women's festival. From the 18th of February to the 9th of March.

4. *Tlacaxipehualiztli*; the name of this month calls to mind the horrible ceremony, in which human victims were flayed for their skins; which, when tanned, formed the priests garments, as we see in the hieroglyphic painting represented in plate 27; *Cohuailhuitl*, festival of the snake. From the 9th to the 29th of March.

5. *Tozoztontli*, month of vigils, because the ministers of the temple were obliged to watch during the great festivals celebrated in this month. From the 30th of March to the 18th of April.

6. *Huey Tozoztli*, the grand vigil, the grand

penitence. From the 19th of April to the 8th of May.

7. *Toxcatl,* month in which cords and garlands of maize were tied around the necks of the idols ; *Tepopochuiliztli,* a censer, from the 9th to the 28th of May. It was in this month, *Toxcatl,* that the fellow soldier of Cortez, Pedro de Alvarado, that ferocious warrior whom the Mexicans called the Sun, *Tonatiuh,* on account of his flaxen hair, made a horrible slaughter of the Mexican nobility assembled within the enclosure of the teocalli. This attack was the signal of the civil dissensions, that caused the death of the unfortunate Montezuma.

8. *Etzalqualiztli,* a name which appears to be derived from *etzalli,* a particular kind of food prepared with the flour of maize. From the 29th of May to the 17th of June.

9. *Tecuilhuitzintli,* month or festival of the young warriors. From the 18th of June to the 7th of July.

10. *Hueytecuilhuitl,* festival of the nobility and warriors advanced in years. From the 8th to the 27th of July.

11. *Miccailhuitzintli,* the little festival of the dead; *Tlaxochimaco,* distribution of flowers. From the 28th of July to the 16th of August.

12. *Hueymiccailhuitl,* the grand festival celebrated in remembrance of the dead ; *Xocotlhuetzi,* fall of fruit, month in which fruit ripens, corres-

ponding to the end of summer. From the 17th of August to the 5th of September.

13. *Ochpaniztli*, a besom, the month appointed for cleaning the canals, and repairing the dykes and roads; *Tenahuitiliztli*. From the 6th to the 25th of September.

14. *Pachtli*, name of a parasite plant, which begins to bud at this period on the trunks of old oaks; *Ezoztli; Teotleco;* come from the gods. From the 26th of September to the 15th of October.

15. *Hueypachtli*, month in which the plant *pachtli* has arrived at a certain size; *Tepeilhuitl*, festival of the mountains, or rather of the rural divinities who preside over the mountains. From the 16th of October to the 4th of November.

16. *Quecholli*, month in which the flamingo (phœnicopterus) a bird called by the Mexicans, on account of the beautiful color of its plumage, *teoquechol*, the divine heron, arrives on the borders of the lake. From the 5th to the 24th of November.

17. *Panquetzaliztli*, from the name of the standard of the god *Huitzilopochtli*, carried in the processions, during the celebrated festival of *Teocualo*, or of *the god eaten by the faithful*, under the form of flour of maize kneaded with blood. From the 25th of November to the 14th of December.

18. *Atemoztli*, the descent of water and of snow; snow begins towards the end of December to cover the mountains, which surround the valley of Mexico. From the 15th of December to the 3d of January.

In the first year of the cycle, the five complementary days correspond to the 4th, 5th, 6th, 7th, and 8th of January. A nation, which makes no intercalation but every 52 years, finds the commencement of its year retrograde nearly a day every four years, and consequently, twelve or thirteen days at the end of the cycle, *xiuhmolpilli*. Hence it results, as we shall see farther on, that the last complementary day, or *nemontemi*, of the last year of the Mexican cycle, corresponds to the 26th of December. Now the five nemontemi being reckoned *vague* and *unlucky* days, the day of the winter solstice, or the 21st of December, was considered as the end of the *Xiuhmolpilli*. The nemontemi, or epagomenes, as well as the twelve or thirteen intercalary days, belong to neither of the two years between which they fall; and it is for this reason, that we have named the winter solstice the end, not the beginning, of a cycle of 52 years.

In the 3d, 4th, and 5th months, which answer to our months of February, March, and April, solemn festivals were instituted in honor of *Tlalocteutli*, the god of water; this period being the time of the great droughts, which last in the

mountainous country till the month of June and July. If the priests had neglected the intercalation, the festivals in which the gods were invoked to grant a year abundant in rains would have gradually approached the time of the harvest: the people would have perceived, that the order of the sacrifices was inverted; and not having lunar months, they could not even, like the gods of Aristophanes *, accuse the Moon of throwing their calendar and religious worship into confusion. As to the denominations and hieroglyphics of the Mexican months, nothing indicates, that they have taken birth in a more northerly climate. The word *quahuitlehua*, it is true, calls to mind, that the trees are clothed with young leaves toward the end of February; but this phenomenon, which is not observed in the low regions of the torrid zone, is suitable to the mountainous region, situate between the 19th and 24th degrees of latitude, where the oaks, without shedding entirely their old leaves, begin to bud forth anew.

We have hitherto spoken of the civil calendar called the *Sun's reckoning, Tonalpohualli;* we shall now examine the ritual calendar, denoted by the names of the *reckoning of the Moon, Metzlopohualli,* and *the reckoning of the festivals, Cemilhuitlapohualiztli,* from *tlapohualiztli,* reck-

* Aristoph. *Nubes,* v. 615.

oning, and *ilhuitl*, festival. This last calendar, the only one employed by the priests, and of which we find traces in almost all the hieroglyphical paintings preserved to our own times, presents a uniform series of small periods of 23 days. These small periods may be considered as *half lunations*; they probably took their origin from the two states of watching, *ixtozoliztli*, and sleep, *cochiliztli*, which the Mexicans attributed to the Moon; according as this luminary lights the greater part of the night, or, appearing only by day on the horizon, seems, according to the popular opinion, to repose in the night. This relation, observed between the periods of thirteen days, and the half of the time that the Moon is visible, before and after her opposition, has undoubtedly given to the ritual calendar the name of the *reckoning of the Moon*; but this denomination ought not to induce us to look for a lunar year in the series of the small cycles, which follow uniformly, and which have nothing common either with the phases or the revolutions of the Moon.

The number 13 by its multiples affords proportions, which the Mexicans made use of to preserve an agreement between the ritual and civil almanacks. A civil year of 365 days contains a day more than twenty-eight small periods of 13 days; now the cycle of 52 years being divided into four *tlalpilli* of 13 years, this

supernumerary day forms at the end of each indiction a small entire period, and a tlalpilli contains three hundred and sixty-five of these periods: that is, as many weeks of thirteen days, as the year has civil days. A year of the ritual almanack has twenty *half lunations*, or two hundred and sixty days, and this same number of days contains fifty-two half decades, or small periods of five days: the Mexicans then found, in the concordance of these two reckonings of the Moon and the Sun, their favourite numbers of five, thirteen, twenty, and fifty-two. A cycle of fifty-two years contained one thousand four hundred and sixty small periods of thirteen days; and, if to these we add thirteen intercalary days, we shall have one thousand four hundred and sixty-one small periods; a number which accidentally coincides with that of the years constituting the Sothiac period.

The cycle of nineteen solar years, which corresponds to two hundred and thirty-five lunations, and which the Chinese knew more than sixteen centuries before Meton *, finds its multiple neither in the cycle of sixty years, which is in use among the greater part of the nations of eastern Asia, and among the Muyscas of the elevated plain of Bogota; nor in the cycle of fifty-two years, adopted by all the nations of the

* La Place, Expos., Tom. 2, p. 267.

Tolteck, Acolhuan, Azteck, and Tlascalteck race. It is true, that five *old ages* of one hundred and four years each form, within a year nearly, the Julian period; and that the double of the period of Meton is almost equal to three indictions *(tlalpilli)* of the Mexican year: but no multiple of thirteen is exactly equal to the number of days contained in a period of two hundred and thirty-five lunations. The period of Meton contains five hundred and thirty-three small cycles and a half of thirteen days, while that of Calippus contains two thousand one hundred and thirty-four and one thirteenth. The knowledge of these periods was useful to the nations of Asia, who, as well as the Peruvians, the Muyscas, and the other tribes of South America, had lunar years: but it must have been absolutely indifferent to the Mexicans, the pretended reckoning of the Moon *(metzlapohualli)* being only an arbitrary division of a great period of thirteen astronomical years into three hundred and sixty-five small periods of thirteen days, each of which has perceptibly the same duration as the sleep or vigil of the Moon.

The Mexicans were in possession of annals, that went back to eight centuries and a half beyond the epocha of the arrival of Cortez in the country of Anahuac. We have already explained how these annals presented, in their sub-

divisions; sometimes a cycle of fifty-two years, at others a tlalpilli of thirteen years, and at others a single year of two hundred and sixty days, contained in twenty small periods of thirteen days, according as the history was more or less minute. Along with the periodical series of the hieroglyphics of the years and the days, the migrations of the nations, their battles, and the events which had rendered the reign of each king illustrious, were represented in paintings brilliant in colouring, hideous from the form and the extreme imperfection of the drawing, but often natural in the composition. It could not be denied, but that Valades, Acosta, Torquemada, and in these latter times Siguenza, Boturini, and Gama, have gained information from paintings which went back as far as the seventh century. I have had in my own hands paintings, in which the migrations of the Toltecks were recognised; but I doubt whether the first Spanish conquerors found, as Gomara asserts, annals that traced events, *year by year*, through eight centuries. The Toltecks had disappeared four hundred and sixty-five years before the arrival of Cortez; the nation which the Spaniards found settled in the valley of Mexico was of the Azteck race: what he knew of the Toltecks he could have learnt only from paintings, which they had left in the country of Anahuac; or from

some dispersed families, who, restrained by the love of their native soil, had not thought proper to share the chances of the emigration.

The annals of the Aztecks begin, according to Gama, at an epocha corresponding to the year 1091 of our era; a period at which, by order of their chief Chalchiuhtlatonac, they celebrated the festival of the renewal of the fire at Tlalixco, called also Acahualtzinco, situate probably under the parallel of thirty-three or thirty-five north latitude. It is only since the year 1091, in which, as the Indian historian Chimalpain expressly says, they *tied* for the first time the years after their going forth from Aztlan, that Mexican history presents the greatest order, and an astonishing minuteness in the recital of events.

Conformably to what we have hitherto stated of the *reckoning of the Sun*, and the uniform division of the year into eighteen months of equal duration, it would have been easy for the Mexicans, to denote the periods of historical events by recording the day of the month, and reckoning the number of years which had passed since the famous sacrifice of Tlalixco. This simple and natural method would without doubt have been followed, if the annals of the empire had not been kept by the priests, *teopixqui*. We sometimes find, it is true, the hieroglyphic of a month, to which are added round points, placed in two unequal rows, proving by their disposi-

tion, that the Azteck priests, as we have already observed, followed the different terms of a series from *right* to left, and not from *left* to right, as the Hindoos, and almost all the nations that now inhabit Europe. We still see at Mexico the copy of a painting, formerly in the museum of the Chevalier Boturini, in which the sign of the month *quecholli*, followed by thirteen points, is placed near a Spanish spearman, whose horse has under his feet the hieroglyphic of the city of Tenochtitlan. This painting no doubt represents the first entry of the Spaniards into Mexico, on the thirteenth of the month quecholli, which, according to Gama, corresponds to the 17th of November, 1519; but we must confess, that simple dates, expressed by the month and the number of the days passed, was very rarely found in the Mexican annals.

With respect to the years, those of the same cycle of fifty-two years were never distinguished by numbers. In order not to confound them, however, they made use of a particular contrivance, which we shall describe farther on; and which is so much the more curious, as it offers points of resemblance between the chronological system of the Mexicans, and that of the people of Asia. The *rounds* or signs of numbers are found added only to the *ligatures*, which indicate cycles of fifty-two years. Thus the hieroglyphic of the Xiuhmolpilli, followed by four rounds, placed

near islets, on which the temple of Mexitli was built, reminded the Mexican, that his ancestors had *tied* the years four times; or that, since the sacrifice of Tlalixco, four times fifty-two years had passed away, when the city of Tenochtitlan was founded on the lake of Tezcuco. These rounds consequently indicated, that this remarkable event had taken place after the year 1299, and before the year 1351. Let us now examine the ingenious but very complicated methods, of which these people made use to denote the year and the day of a cycle of fifty-two years.

This method, as we shall presently explain, is identic with that made use of by the Hindoos, the Thibetans, the Chinese, the Japanese, and the Asiatic people of the Tartar race; who also distinguished the months and the years by the correspondence of several periodical series*, the number of the terms of which is not the same. The Mexicans employ, for the cycle of years, the four following signs, which have the names of

Tochtli - - a rabbit or hare,
Acatl - - - a cane,
Tecpatl - - a flint, or silex,
Calli - - - a house.

We find these four hieroglyphics in several of the preceding plates. For the figure of the rab-

* Series Periodiques.

bit *(tochtli)* see, in plate 13, the animal with large ears figured in the eighth compartment, reckoning from the bottom on the right; plate 23, the third compartment at the bottom on the left; and more especially plate 27, No. 1, the eighth compartment. For cane *(acatl)*, flint *(tecpatl)*, and house *(calli)*, see, on the circular stone represented plate 23, the fifth, tenth, and fifteenth compartments, which follow that of the rabbit, from left to right. We shall easily recognise the same forms in plate 27, No. 1, in the compartments thirteen, eighteen, and three, reckoning in the same row from right to left, and beginning with the lower row. The sign of flint is also seen in plate 13, behind the figure in the attitude of adoration. On this same plate the *calli* is represented by the entire figure of a house, in which are seen the door, and a very elevated roof.

Let us at present imagine the cycle, or the *half old age*, divided into four tlalpilli, each of thirteen years; and the four signs rabbit, cane, flint, and house, added in a periodical series to the fifty-two years contained in a cycle, we shall find, that two indictions cannot begin by the same sign; that the sign placed at the head of an indiction must necessarily terminate it, and that the same sign cannot belong to the same number. The following is the table of the Mexican cycle, called *ligature* or *xiuhmolpilli*.

FIRST TLALPILLI.		SECOND TLALPILLI.		THIRD TLALPILLI.		FOURTH TLALPILLI.	
Ce Tochtli.	1. Rabbit.	Ce Acatl.	1. Cane.	Ce Tecpatl.	1. Flint.	Ce Calli.	1. House.
Ome Acatl.	2. Cane.	Ome Tecpatl.	2. Flint.	Ome Calli.	2. House.	Ome Tochtli.	2. Rabbit.
Jei Tecpatl.	3. Flint.	Jei Calli.	3. House.	Jei Tochtli.	3. Rabbit.	Jei Acatl.	3. Cane.
Nahui Calli.	4. House.	Nahui Tochtli.	4. Rabbit.	Nahui Acatl.	4. Cane.	Nahui Tecpatl.	4. Flint.
Macuilli Tochtli.	5. Rabbit.	Macuilli Acatl.	5. Cane.	Macuilli Tecpatl.	5. Flint.	Macuilli Calli.	5. House.
Chicuace Acatl.	6. Cane.	Chicuace Tecpatl.	6. Flint.	Chicuace Calli.	6. House.	Chicuace Tochtli.	6. Rabbit.
Chicome Tecpatl.	7. Flint.	Chicome Calli.	7. House.	Chicome Tochtli.	7. Rabbit.	Chicome Acatl.	7. Cane.
Chicuei Calli.	8. House.	Chicuei Tochtli.	8. Rabbit.	Chicuei Acatl.	8. Cane.	Chicuei Tecpatl.	8. Flint.
Chicuhnahui Tochtli.	9. Rabbit.	Chicuhnahui Acatl.	9. Cane.	Chicuhnahui Tecpatl.	9. Flint.	Chicuhnahui Calli.	9. House.
Matlactli Acatl.	10. Cane.	Matlactli Tecpatl.	10. Flint.	Matlactli Calli.	10. House.	Matlactli Tochtli.	10. Rabbit.
Matlact. ozce Tecpatl.	11. Flint.	Matlactli ozce Calli.	11. House.	Matl. ozce Tochtli.	11. Rabbit.	Matlactli ozce Acatl.	11. Cane.
Matlact. omome Calli.	12. House.	Matl. omome Tochtli.	12. Rabbit.	Matl. omome Acatl.	12. Cane.	Matl. omome Tecpatl.	12. Flint.
Matl. omey Tochtli.	13. Rabbit.	Matlactli omey Acatl.	13. Cane.	Matl. omey Tecpatl.	13. Flint.	Matlactli omey Calli.	13. House.

The words *ce, ome, jei,* placed before the names of the four hieroglyphics of the years, indicate the numbers, the series of which does not pass thirteen, and which are consequently repeated four times in a ligature. The following table exhibits the numbers from one to thirteen, in the Mexican or Azteck, Nootka, Muysca or Mosca, Peruvian or Qquichua, Mantchou, Oigour, and Mongul languages.

AMERICAN LANGUAGES.				TARTARIAN LANGUAGES.		
AZTECK. *(Mexico.)*	QQUICHUA. *(Peru.)*	MUYSCA. *(New Grenada.)*	NOOTKA. *(North West Coast.)*	MANTCHOU. *(Eastern Tartary.)*	MONGUL. *(Western Tartary.)*	OIGOUR. *(Elevated Plain of Turfan.)*
1. Ce.	Huc.	Ata.	Sahuac.	Emou.	Neguè.	Pir.
2. Ome.	Iscay.	Bosa.	Atla.	Tchoué.	Khour.	Iki.
3. Jei.	Quimza.	Mica.	Catza.	Ilan.	Gourbâ.	Outche.
4. Nahui.	Tawa.	Muyhica.	Nu.	Touyin.	Durba.	Tourou.
5. Macuilli.	Pichca.	Hisca.	Sutcha.	Sountcha.	Taboû.	Pich.
6. Chicuace.	Zocta.	Ta.	Nupu.	Ningoun.	Djourga.	Alti.
7. Chicome.	Canchis.	Cuhupqua.	Atlipu.	Nadan.	Dolo.	Iti.
8. Chicuei.	Pussac.	Suhuza.	Atlcual.	Tchakoun.	Naïma.	Sakis.
9. Chicuhnahui.	Yscon.	Aca.	Tzahuacuatl.	Ouyoun.	Youzou.	Toukous.
10. Matlactli.	Chunca.	Ubchica.	Ayo.	Tchouan.	Arban.	Oun.
11. Matlactli ozce.	Chunca hucnioc.	Quicha ata.	Ayo sahuac.	Tchouan emou.	Arban neguè.	Pir oun.
12. Matlactli omome.	Chunca iscayoc.	Quicha bosa.	Ayo atla.	Tchouan tchoué.	Arban khour.	Iki oun.
13. Matlactli omey.	Chunca quimzayoc.	Quicha mica.	Ayo catza.	Tchouan ilan.	Arban gourbâ.	Outche oun.

We may be struck with the extreme difference in the seven languages, in which we have just given the cardinal numbers. The American languages are as distinct from each other, as they are from the Tartar tongues. This want of analogy ought not however to be alleged as a proof against the opinion, that the American nations have had ancient communications with eastern Asia. The different groups of Tartarian nations vary as much in this respect. The Oigours, who, two ages before our era, emigrated from the banks of the Selinga toward the elevated plain of Turfan, in the latitude of 43° 30′ speak a language differing more from that of the Mantchous, than the German from the Latin. When tribes of the same origin are separated during a long series of ages by seas and vast deserts, their idioms preserve but a very small number of roots and forms, that are common to each other.

In the same manner as the Mexicans, speaking of the year of a cycle, placed the cardinal numbers *ce, ome, jei,* before the names of the four hieroglyphics rabbit, cane, flint, and house, they joined in their paintings the signs of these numbers to the signs of the years. The mode was the same as that employed to distinguish the cycles or *ligatures.* As the periodical series of the numbers had only thirteen terms, it was suf-

ficient to add to the hieroglyphic the *rounds*, denoting the units.

The symbolical writing of the Mexican nations exhibited simple signs equally for twenty, and for the second and third powers of the same number, which recalls to mind that of the fingers and toes of the hands and the feet. A small standard, or flag, represented twenty units; the square of twenty, or four hundred, was figured by a *feather*, because grains of gold, enclosed in a quill, were used in some places as money, or a sign for the purposes of exchange. The figure of a *sack* indicated the cube of twenty, or eight thousand, and bore the name of *xiquipilli*, given also to a kind of purse that contained eight thousand grains of cacao. A standard divided by two cross lines, and half coloured, indicated half twenty, or ten. If the standard was three quarters coloured, it denoted fifteen units or three fourths of twenty. In reckoning, the Mexican did not name the multiples of ten, which the Arabians called *knots*, but the multiples of twenty. He said one twenty, *cem-pohualli*, two twenties, *om-pohualli*, three twenties, *yei-pohualli*, and four twenties, *nahui-pohualli*. The last expression is the same with that employed in French*. It is almost superfluous to observe, that the Mexicans were unacquainted

* Quatre-vingt.

with the method of giving to the signs of the numbers the *values of position* *; that admirable method invented either by the Hindoos, or by the Thibetans †, but unknown alike to the Greeks ‡, the Romans, and the civilized nations of Western Asia. The Mexicans joined their hieroglyphics of the numbers nearly in the same manner as the Romans repeated the letters of their alphabet, which served them as ciphers. We should not be surprised to see, that the Mexican arithmetic does not present a simple hieroglyphic for hundreds above four hundred, when we recollect ||, that the Arabians, till the fifth age of the hegira, knew as little of signs for the enumeration of the hundreds above four hundred; and that, to write nine hundred, this people, justly celebrated in the annals of the sciences, were obliged to place twice the sign of four hundred by the side of the sign of one hundred.

From what we have observed respecting the manner of distinguishing the *ligatures* from each other, and the years contained in a *ligature*, it follows, that a period was determined, by naming at once the number of the *ligatures*, or cycles,

* La Place, Expos., tom. 2, p. 276.

† Georgii Alph. Tibet., c. 23, p. 637.

‡ Delambre, sur les fonds et les analogues des Grecs. (Oeuvres d'Archimède, par Peyrard, p. 575.)

|| Sylvestre de Sacy, Gramm. Arab., 1810, P. 1, p. 74.

and two corresponding terms in the two periodical series of thirteen numbers and four signs. The following table presents several remarkable epochas of the Mexican history, indicated according to the era of the Aztecks. We should recollect, that these nations reckoned the number of their cycles, or *xuihmolpillis*, only from the year 1091; because, in their annals, they had established a new chronological order after their departure from Aztlan, or from the beginning of their migrations towards the south.

TABLE.

Nahui Xiuhmolpilli, ome Calli (4th Cycle, 2 House).....	1325. Foundation of Ténochtitlan.
Macuilli Xiuhmolpilli, ce Calli (5th Cycle, 1 House).....	1389. Accession of King Huitzilihuitl.
Chicuace Xiuhmolpilli, chicuace Tochtli (6th Cycle, 6 Rabbit)	1446. Great inundation of the city of Mexico.
Chicome Xiuhmolpilli, matlactli omey Tochtli (7th Cycle 13 Rabbit).....	1492. Arrival of Columbus in the West Indies.
Chicuei Xiuhmolpilli, ce Acatl (8th Cycle, 1 Cane).....	1519. Entrance of Cortez into Tenochtitlan.
Chicuei Xiuhmolpilli, ome Tecpatl (8th Cycle, 2 Flint)	1520. Death of Montezuma.
Chicuei Xiuhmolpilli, jei Calli (8th Cycle, 3 House).....	1521. Taking and Destruction of Tenochtitlan.

The same contrivance of the concordance of two periodical series was employed to distinguish the days of the same year. It appears, that originally among the Mexican nations, as well as among the Persians, each day of the month had a name, and a particular sign; these twenty signs recall to mind the *yogas*, which, in the astrological almanack of the Hindoos, we find added to the twenty-eight days of the lunar month. In the *Metztlapohualli*, or *reckoning of the Moon* of the Aztecks, they were distributed among the small cycles of the half-lunations; so that a periodical series of thirteen terms, which were all ciphers, corresponded to a periodical series of twenty terms, which contained only hieroglyphical signs. It is in this series of days, that we find the four grand signs, rabbit, cane, flint, and house, by which, as we have just seen, the years of a cycle were denoted; sixteen other signs of an inferior order were so distributed, that in an equal number of four they separated the grand signs one from the other.

Recollecting, that each Mexican month was divided into four small periods of five days, we may conceive, that originally the hieroglyphics rabbit, cane, flint, and house, indicated the beginning of these small periods in the years, the first day of which bore one of the four signs above named. In fact, when the first of the

month *tititl* has the sign *calli*, the sixth of all the following months will be *tochtli*, the eleventh *acatl*, and the sixteenth *tecpatl:* each month will begin as it were by a Sunday, and these Sundays will fall during the whole year on the same days of the months. The Mexicans paid particular regard to the events, that happened on one of the four days which had the hieroglyphics of the cycle of the years. We find traces of this superstition among the Persians; who, in order to give a sign *(karkunan)* to each day of the month, added to the twelve *celestial spirits*, who presided over the months, eighteen ministers of an inferior order. The Mexicans considered those days as lucky, which bore the sign of the year. The Persians* distinguished the days governed by the same angel, that presided over the whole month.

As most of the hieroglyphic paintings represented in the plates accompanying this work relate to the sacrifices, which were to be made in each period of thirteen days, we find the figures of the twenty signs of the days several times repeated. I shall here mention only the plates 13, 23, and 27. The following are the names of these signs:

* Langles, sur le Calendrier Persan, dans Chardin, Voyage à Ispahan, vol. 2, p. 265.

CALLI . . . a house.
Cuetzpalin . . . a lizard.
Cohuatl . . . a snake. This word is found in *Cihuacohuatl**, *serpent woman*, the Eve of the Mexicans.
Miquiztli . . death, a death's head.
Mazatl . . . a buck, or stag.
TOCHTLI . . a rabbit.
Atl . . . . water.
Itzcuintli . . . a dog.
Ozomatli . . . an ape.
Malinalli . . . grass.
ACATL . . . a cane.
Ocelotl . . . . a tiger, or jaguar.
Quauhtli . . . an eagle.
Cozcaquauhtli . king of the vultures.
Ollin . . . . annual course of the Sun.
TECPATL . . flint.
Quiahuitl . . rain.
Xochitl . . . a flower.
Cipactli . . . a sea animal. *Teocipactli*, fish-divinity, is one of the names, which the Mexicans gave *Coxcox*, who is the Noah of the people of the Semetic race.
Ehecatl . . . . wind.

* See above, p. 195.

The numbers thirteen and twenty having no common factors in the almanack of half-lunations, the two periodical series cannot twice correspond to the same terms, till after thirteen multiplied by twenty, or two hundred and sixty days. In a year, the first day of which has the sign *cipactli*, there is no half-lunation, that begins with the sign *cipactli*, in the first thirteen months; but after the month *pachtli*, the same signs return with the same ciphers. To avoid this cause of error, the Mexicans, faithful to their principles of not naming the number of small periods of thirteen days, had again recourse to the contrivance of periodical series. They formed a third series of nine signs, called the *lords* or *masters of the night*, namely,

Xiuhteucli tletl .	fire, or master of the year.
Tecpatl . . .	flint.
Xochitl . . .	a flower.
Cinteotl . . .	the goddess of maize.
Miquiztli . .	death.
Atl	water.
Tlazolteotl . .	the goddess of love.
Tepeyollotli . .	a spirit that inhabits the interior of mountains.
Quiahuitl . .	rain.

We may be astonished at finding a series of nine terms in a calendar, that makes use only of

the numbers 5, 13, 18, 20, and 52; we may even be tempted to look for some analogy between the nine *lords of the night* of the Mexicans, and the nine astrological signs of several nations of Asia, who join to the seven visible planets two invisible dragons, to which they attribute eclipses: but without doubt it is only the facility, with which the nine *lords of the night* divide themselves forty times into three hundred and sixty days, that has given the preference to the number nine.

The five complementary days, called by the Persians *furtive*, or *pendjehidouzdideh*, bear, among the Mexicans, the name of *nemontemi*, or *void*, because they do not add to them those terms of the third series, which the Indian authors consider as the *companions* of the signs of the days. We should observe, and this circumstance may become embarrassing in the Azteck chronology, that five of these *companions* bear the same name as the hieroglyphics of the day: but, according to the reveries of the American astrologers, the *spirits* that belong to the series of the nine signs govern the night, while the other twenty signs govern the day. The Hindoos were acquainted also with genii *(caranas)* presiding over half a lunar day *(ti'thi)*.

As there are twenty signs of the day, and nine *companions* or *lords of the night*, the same companion must correspond, every nine multiplied by

twenty, or one hundred and eighty days, to the same hieroglyphics; but it is impossible, that, in the same year of three hundred and sixty-five days, the same term of three series, namely, the *number*, the *sign of the day*, and the *companion*, or nocturnal spirit, can coincide more than once. In a year which begins by *Cipactli*,

The 11th of January..will be..3d Calli, Xochitl.
The 10th of July.....will be..1st Calli, Xochitl.
The 2d of February..will be..12th Cohualt, Tlazolteotl.
The 1st of August ...will be..10th Cohuatl, Tlazolteotl.
The 18th of May .....will be..3d Xochitl, Xochitl.
The 4th of November.will be..1st Xochitl, Xochitl.

The employment of the third periodical series, by means of which two days, that have the same number and the same hieroglyphic, are distinguished; for instance, 1 *Cipactli*, corresponding to the 9th of January and the 26th of September, was unknown to the greater part of the Spanish historians. It was discovered by Mr. Gama, from the Mexican manuscripts of the Indian Christoval del Castillo. In order to denote a day, according to the complicated method of the Mexicans, we should say, a fourth of a month, which is at the same time a *Wednesday* of the Gregorian, and a *quintidi* of the French republican calendar. This expression would indicate the coincidence of certain terms

of three periodical series; namely, of the thirty or thirty-one days of the month, of the seven days of the week, and of the ten days of the decade. To dissipate entirely every doubt, that may remain respecting the chronological system of the Mexicans, we shall here add a table, which unites the divisions of the ritual and civil calendars, and their correspondence with the Gregorian calendar.

METZLAPOHUALLI, RITUAL AND ASTROLOGICAL CALENDAR.

PERIODICAL SERIES.

SMALL PERIODS OF 13 DAYS.	SERIES OF THE 13 NUMBERS.	SERIES OF THE 20 SIGNS OF THE DAYS.	SERIES OF THE 9 LORDS OF THE NIGHT.
FIRST HALF-LUNATION.	1	Cipactli	*Tlet*
	2	Ehecatl	Tecpatl
	3	*Calli*	Xochitl
	4	Cuetzpalin	Cinteotl
	5	Cohuatl	Miquiztli
	6	Miquiztli	Atl
	7	Mazatl	Tlazolteotl
	8	*Tochtli*	Tepeyollotli
	9	Atl	Quiahuitl
	10	Itzcuintli	*Tlet*
	11	Ozomatli	Tecpatl
	12	Malinalli	Xochitl
	13	*Acatl*	Cinteotl
SECOND HALF-LUNATION.	1	Ocelotl	Miquiztli
	2	Quauhtli	Atl
	3	Cozcaquauhtli	Tlazolteotl
	4	Ollin	Tepeyollotli
	5	*Tecpatl*	Quiahuitl
	6	Quiahuitl	*Tlet*
	7	Xochitl	Tecpatl
	8	Cipactli	Xochitl
	9	Ehecatl	Cinteotl
	10	*Calli*	Miquiztli
	11	Quetzpalin	Atl
	12	Cohuatl	Tlazolteotl
	13	Miquiztli	Tepeyollotli
	1	Mazatl	Quiahuitl
	2	*Tochtli*	*Tlet*
	3	Atl	Tecpatl
	4	Itzcuintli	Xochitl
	5	Ozomatli	Cinteotl

TONALPOHUALLI, CIVIL CALENDAR.

MEXICAN MONTHS, DIVIDED INTO PERIODS OF 5 DAYS.

TITITL.	1	
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	
	11	
	12	
	13	
	14	
	15	
	16	
	17	
	18	
	19	
	20	
ITZCUINTLI XOCHITL.	1	
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	
	11	

CORRESPONDENCE WITH THE Gregorian Calendar, FOR THE YEAR 1091.

JANUARY.	9	
	10	
	11	
	12	
	13	
	14	
	15	
	16	
	17	
	18	
	19	
	20	
	21	
	22	
	23	
	24	
	25	
	26	
	27	
	28	
	29	
	30	
	31	
FEBRUARY.	1	
	2	
	3	
	4	
	5	
	6	
	7	
	8	

It would be useless to extend this table beyond the first thirty-one days of the Mexican year; but we will here observe, that the Indians of Chiapa, who employed the same divisions of time, and the same contrivance of the periodical series, gave the hieroglyphics of the days contained in a month the name of twenty illustrious warriors, who in the remotest times had conducted the first colonists to the mountains of Teochiapan. Among these signs of the days, (*kârkunân* of the Persians,) the Chiapanese distinguished, like the Aztecks, four great, and sixteen little signs. The first began the periods of five days; but for the names of house, rabbit, cane, and flint, (*calli, tochtli, acatl,* and *tecpatl*), the Chiapanese had substituted those of *Votan, Lambat, Been,* and *Chinax;* four chiefs celebrated in their historical annals.

We have already fixed the attention of our readers on this *Votan,* or *Wodan,* an American, who seems to be a member of the same family with the *Wods,* or *Odins,* of the Goths, and nations of Celtic origin. As Odin and Boudha, according to the learned researches of Sir William Jones, are probably one and the same person *, it is curious to see the names of *Boudvar, Wodans-dag,* (Wednes-day), and *Votan,* denote in India, in Scandinavia, and Mexico, a-

* Asiat. Res. vol. 1, p. 511; vol. 2, p. 343.

day of a small period. According to the ancient traditions, collected by the Bishop Francis Nunnez de la Vega; "the Wodan of the Chiapanese was grandson of that illustrious old man, who, at the time of the great deluge, in which the greater part of the human race perished, was saved on a raft together with his family." Wodan cooperated in the construction of the great edifice, which had been undertaken by men to reach the skies; the execution of this rash project was interrupted; each family received from that time a different language, and the great spirit, *Teotl*, ordered Wodan, to go and people the country of Anahuac. This American tradition reminds us of the Menou of the Hindoos, the Noah of the Hebrews, and the dispersion of the Couschites of Singar [the Cushites of Shinar]. Comparing this tradition either with those of the Hebrews and Indians preserved in Genesis and the two sacred Pouranas *, or with the fable of Xelhua the Cholulain †, and other facts cited in the course of this work, it is impossible to avoid being struck with the analogy, which exists between the old memorials of the people of Asia, and those of the New Continent.

We shall here prove, as we have just asserted,

* L. c. vol. 3, p. 436.

† See above, p. 96.

that this analogy is particularly manifest in the division of time, in the use of periodical series, and in the ingenious, though complex and embarrassing method, of denoting a day or a year, not by ciphers, but by astrological signs. The Toltecks, the Aztecks, the Chiapanese, and other nations of American race, reckoned by cycles of fifty-two years, divided into four periods of thirteen years; the Chinese, the Japanese, the Calmucks, the Moghols, the Mantchous, and other Tartar hordes, have cycles of sixty years, divided into five small periods of twelve years. The nations of Asia, like those of America, have particular names for the years contained in a cycle; it is still said at Lassa, and at Nangasacki, as formerly in Mexico, that such or such an event took place in the year of the *rabbit*, the *tiger*, or the *dog*. None of these nations has as many names as there are years in the cycle; all consequently must have recourse to the contrivance of the correspondence of periodical series. Among the Mexicans, these series are of thirteen numbers and four hieroglyphical signs; among the nations of Asia, whom we have just named, the series do not contain numbers, they are formed only of signs corresponding to the twelve constellations of the zodiac, and the names of the elements, which afford ten terms, because each element is con-

sidered as male and female. The character of these methods is the same in the chronology of the Americans as in that of the Asiatics: if we cast our eyes over the table of the years, which we have sketched some pages back*, we shall see, that the mode adopted by the Mexicans is even less complicated. The Japanese, to denote the period of the accession of a Dairi, do not say, that it was in the year *ouma* (horse) of the second period of twelve years: they call the nineteenth year of the cycle, the year *male water* (horse), placed between the years *female water* (sheep) and *female metal* (serpent). To have a clear idea of these periodical series of the Japanese calendar, we should recollect, that this nation, like the people of Thibet, reckon five elements; namely, wood *(keno)*, fire *(fino)*, earth *(tsutsno)*, metal, or lead *(kanno)*, and water *(midsno)*. Each element is male or female, according as the syllable *je* or *to* is added; a distinction which was also in use among the Egyptians†. In order to distinguish the sixty years of the cycle, the Japanese combine the ten elements, or terrestrial principles, with the twelve signs of the zodiac, called the celestial principles. We shall give here only the

* See p. 310.

† Seneca, Quæst. Nat. lib. 3, c. 14.

first two indictions contained in the Japanese cycle*.

TABLE.

1. *Kino je ne* (rat).	13. *Fino je ne.*
2. *Kino to us* (ox).	14. *Fino to us.*
3. *Fino je torra* (tiger).	15. *Tsutsmo je torra.*
4. *Fino to ov* (hare).	16. *Tsutsmo to ov.*
5. *Tsutsmo je tats* (crocodile or dragon).	17. *Kanno je tats.*
6. *Tsutsmo to mi* (serpent).	18. *Kanno to mi.*
7. *Kanno je uma* (horse).	19. *Midsno je uma.*
8. *Kanno to tsitsuse* (sheep).	20. *Midsno to tsitsuse.*
9. *Midsno je sar* (ape).	21. *Kino to sar.*
10. *Midsno to torri* (hen).	22. *Kino to torri.*
11. *Kino je in* (dog).	23. *Fino je in.*
12. *Kino to y* (hog).	24. *Fino to y.*

In the Mexican calendar, each of the four indictions of thirteen years begins with a different sign; in the Japanese calendar, each period of

* Kæmpfer, Hist. du Japon, 1729, vol. 1, p. 137, tab. 15.

twelve years is governed by one of the five male elements. As, among the Mexicans, the fourth term of the series of numbers, *nahui*, can correspond, in fifty-two years, only once to the second term of the series of signs, *acatl;* so among the Japanese, in a cycle of sixty years, one of the five male elements is placed but once with one of the twelve signs of the zodiac. The following table, which contains fourteen Mexican and Japanese years, will clearly explain the analogy, that exists between the calendars of the nations of Mexico and of Eastern Asia.

TABLE.

NUMBER OF THE YEARS.	CYCLE OF THE JAPANESE. Let α, α', β, β', γ, γ', be the male and female elements, and a, b, c, . . . the celestial signs, and we shall have	CYCLE OF THE MEXICANS. Let α, β, γ, δ, be the four signs of the years, and a, b, c, . . . the thirteen names of the ciphers, and we shall have
1	α, a.	a, α.
2	α', b.	b, β.
3	β, c.	c, γ.
4	β', d.	d, δ.
5	γ, e.	e, α.
6	γ', f.	f, β.
7	δ, g.	g, γ.
8	δ', h.	h, δ.
9	ε, i.	i, α.
10	ε', k.	k, β.
11	α, l.	l, γ.
12	α', m.	m, δ.
13	β, a.	n, α.
14	β', b.	a, β.

Periodical series are in use also in China, where ten *can* combined with twelve *tchi* denote the days or years of the periods of sixty days or sixty years*. Among the Japanese, the Chinese, and the nations of Mexico, the periodical series can serve only to characterize fifty-two or sixty years. The Thibetans, on the contrary, have rendered the contrivance of series so complex, that they have names for one hundred and ninety-two, and even for two hundred and fifty-two years. In denoting, for instance, the memorable year, in which the great lhama Kan-ka-gnimbo, united, with the consent of the Emperor of China, the ecclesiastic and temporal powers*; the inhabitant of Lhassa cites the year *male fire*, bird *(me po cia)* of the fourteenth cycle past since the deluge. He reckons fifteen elements; namely, five of the masculine gender, five of the feminine, and five neuter. By combining these fifteen elements with the twelve signs of the zodiac, and naming the first twelve years of the cycle only after the celestial signs, without adding any element, he obtains denominations for $12 \times 15 + 12 = 192$ years. Adding finally sixty years denoted by the combination of ten male and female elements with the twelve signs of the zodiac, he finds his great cycle of two hundred

* Observ. Astr. du P. Souciet, published by P. Gaubil, tom. 1, p. 26; tom. 2, p. 175.

and fifty-two years. Let a, b, c, ..., be the signs of the zodiac; α, β, γ, . . ., the neutral elements; α', β', γ', . . ., the male elements; and α'', β'', γ'', ..., the female elements; we shall have, 1st, for the first twelve years, a, b, c, d, ...; 2dly, for the years 13--72, αa, αb, αc, ..., βa, βb, βc, ..., γa, γb, γc, ...; 3dly, for the years 73—132, $\alpha' a$, $\alpha' b$, $\alpha' c$, ..., $\beta' a$, $\beta' b$, $\beta' c$; 4thly, for the years 133—192, $\alpha'' a$, $\alpha'' b$, $\alpha'' c$, ..., $\beta'' a$, $\beta'' b$, $\beta'' c$, ...; 5thly, for the years 193—252, $\alpha' \alpha'' a$, $\alpha' \alpha'' b$, $\alpha' \alpha'' c$, ...; $\beta' \beta'' a$, $\beta' \beta'' b$, $\beta' \beta'' c$, ...

The *Tzihi-chen*, or public calculators of Lhassa*, allege in favour of the chronology of Thibet, that, as the years of the same name return only every two centuries, the date of an historical event is fixed, even when the cycle is not indicated. The uncertainty is greater among the Japanese, and among the Mexicans, where the same names occur every sixty or fifty-two years. We may be surprised, that the Thibetans, who from the highest antiquity made use of the same ciphers and the same system of numeration as the Hindoos, have not abandoned the complicated method of periodical series. This method, which takes its origin from astrological reveries, ought to have been employed only by people, who, like the Aztecks and the Toltecks, found

* Georgi, Alph. Tibet. p. 516.

difficulty in expressing very considerable numbers, and whose annals were written in hieroglyphical characters.

We have just seen, that the Mexicans, the Japanese, the people of Thibet, and several other nations of central Asia, have followed the same system in the division of the great cycles, and in the denomination of the years that compose them. We have now to examine a fact, which more immediately concerns the history of the migrations of the natives, and which seems hitherto to have escaped the researches of the learned. I think it may be proved that a great part of the names, by which the Mexicans denoted the twenty days of their month, are those of the signs of a zodiac in use from the remotest antiquity among the nations of Eastern Asia. In order to demonstrate, that this assertion is less unfounded than it appears at first sight, I shall unite in the same table, 1st, The names of the Mexican hieroglyphics, such as they have been transmitted to us by every writer of the sixteenth century; 2dly, The Tartarian, Japanese, and Thibetan names of the twelve signs of the zodiac; and 3dly, The names of the nacshatras, or lunar houses, of the calendar of the Hindoos. I flatter myself, that such of my readers as shall attentively examine this comparative table will feel interested in the discussion of the first divisions of the zodiac, on which we are going to enter.

SIGNS OF THE ZODIAC.				HIEROGLYPHICKS OF THE DAYS OF THE Mexican Calendar.	NACSHATRAS, OR LUNAR HOUSES OF THE HINDOOS.
HINDOOS, GREEKS, AND WESTERN NATIONS.	MANTCHOU TARTARS.	JAPANESE.	THIBETANS.		
Aquarius.	Singueri.	Ne.	Tchip, *rat, water.*	Atl, *water.*	
Capricorn.	Ouker.	Ous.	Lang, *ox.*	Cipactli, *sea monster.*	*(The Mahara is a sea monster.)*
Sagittary.	Pars.	Torra.	Tah, *tiger.*	Ocelotl, *tiger.*	
Scorpion.	Taoulaï.	Ov.	Io, *hare.*	Tochtli, *hare.*	
Balance.	Lon.	Tats.	Brou, *dragon.*	Cohuatl, *serpent.*	*Serpent.*
Virgin.	Mogaï.	Mi.	Proul, *serpent.*	(Acatl, *cane.*)	*Cane.*
Lion.	Morin.	Ouma.	Tha, *horse.*	(Tecpatl, silex, *knife.*)	*Razor.*
Crab.	Koin.	Tsitsouse.	Lon, *goat.*	(Ollin, *path of the sun.*)	Traces of the feet of Vishnou.
Twins.	Petchi.	Sar.	Prchou, *ape.*	Ozomatli, *ape.*	*Ape.*
Bull.	Tukia.	Torri.	Tcha, *bird.*	Quauhtli, *bird.*	
Ram.	Nokai.	Iu.	Ky, *dog.*	Itzcuintli, *dog.*	*Dog's tail.*
Fishes.	Gacai.	Y.	Pah, *hog.*	(Calli, *house.*)	*House.*

From the remotest periods, the nations of Asia were acquainted with the two divisions of the ecliptic, one into 27 or 28 houses, or lunar prefectures, the other into 12 parts. The assertion, that this last division was found only among the Egyptians, is erroneous. The most ancient monuments of Indian literature, the works of Calidas and Amarsinh* mention both the 12 signs of the zodiac, and the 27 *campaigns of the moon*. From what we know of the communications which had taken place several thousands of years before our æra, between the nations of Ethiopia, Upper Egypt, and Hindostan, we ought not to consider all that they transmitted to the people of Greece as belonging exclusively to the Egyptians.

The division of the ecliptic into 27 or 28 lunar houses, is probably † more ancient than the division into twelve parts, which relate to the annual motion of the Sun. Phenomena repeated every lunation in the same order, fix the attention of men much more strongly than changes of position, the cycle of which is finished only in the space of a year. As the Moon is placed, in each lunation, near the same stars, it appears natural, that particular names should be given to the 27 or 28 constellations, through which she passes in

* Asiatic Researches, vol. ii, p. 346.

† Le Gentil, vol. i, p. 261.

a synodical revolution. The names of these constellations have by degrees been given to the lunar days themselves, and this apparent connexion between the sign and the day is become the principal basis of the chimerical calculation of astrology.

On an attentive examination of the names, which the *nacshatras*, or lunar houses, bear in Hindostan, we recognise in them not only all the names of the Tartar and Thibetan zodiac, but also those of several constellations, which are identic with the signs of the Greek zodiac. Each nacshatra has 13° 20′, and 2 nacshatras correspond to one of our signs. The following table shows the great probability, that the solar zodiac took its origin from the lunar zodiac: and that the twelve signs of the former were chosen in a great measure among the 27 nacshatras.

LUNAR HOUSES.	SIGNS of the ZODIAC.
Rat	*Rat*, Aquarius.
Antelope.	Ox, Capricorn.
Arrow, *bow.*	Tiger, *Sagittarius.*
Tail of the *lion.*	*Lion.*
Beam of a pair of *scales.*	Dragon, *Balance.*
Serpent.	*Serpent*, Virgin.
Horse.	*Horse.*
Goat.	*Sheep*, Crab.
Ape.	*Ape*, Twins.
Eagle.	*Bird*, Bull.
Dog's tail.	*Dog*, Ram.
Fish.	Hog, *Fish.*

In the Arabian sky, the belt of Orion is denoted under the name of *Mican*, the beam of a pair of scales; and it seems so much more remarkable, that a lunar station of the Hindoos bears the same denomination, as, since the discovery of the zodiac of Tentyra, doubts have been raised with respect to the antiquity of the constellation of the Balance. It cannot be denied, that the signs, which compose the Egyptian, Chaldean, and Greek zodiac, were known in India from the remotest times; and it is probable, that Julius Cæsar, when he added the Balance to the Roman zodiac, followed the

advice of the astronomer Sosigenes *, who, born in Egypt, could not be ignorant of the division of the ecliptic used in the east. There is however no need † of raising doubts respecting the high antiquity of the sign of the Balance, to weaken the unfounded hypothesis, according to which a temple of Upper Egypt was built more than four thousand years before our æra.

Struck with the analogy that exists between the denominations of the nacshatras, and those of several signs of the zodiac of Thibet and of Greece, I have examined whether the constellations, which bear the same name, correspond to the same points of the heavens: and I find they do not, whether we suppose, that the first nacshatra, known under the denomination of the Horse, is the Horse of the Thibetan zodiac, and consequently the Lion of the Greek zodiac; or whether we admit with Sir W. Jones and Mr. Colebrooke‡, that the commencement of the nacshatras is placed in the sign of the Ram, which is the Dog of the Thibetan zodiac. This last hypothesis would seem probable only if the lunar houses were reckoned *contrary to the order*

* Buttman, in Ideler, Hist. Unt. p. 372—378.

† See a learned treatise by Visconti, inserted in the translation of Herodotus by Larcher (2d ed.), Tom. 2, p. 576; and Visconti, Miscell. di Museo Pio—Clementino, Tom. 6. p. 25, note, c.

‡ Asiatic Researches, Vol. 9, p. 118.

of the signs: then the six nacshatras denoted by the names of *two faces, three prints of the feet of Vishnou,* the *tail of the lion,* the *wreath of leaves,* the *arrow,* and the *head of the antelope,* would have represented our signs, the Twins, the Crab, the Lion, the Virgin, the Sagittary, and Capricorn. But on any of these suppositions, the Balance, the Lion, and the Ram, are not placed at the reciprocal distances which are fitted for them. According to the learned researches of the members of the society at Calcutta, the nacshatras *aswini,* horse; *pushya,* arrow; and *mula,* tail of the lion; answer to α of the Ram, δ of the Crab, and γ of the Scorpion, of the Greek zodiac, or to the dog, the sheep, and hare of the zodiac of Tartary and Thibet.

It may seem extraordinary, at first sight, that these nations, in forming from the twenty-seven or twenty-eight signs of the lunar calendar the twelve signs of the solar zodiac, should have preserved the names of a great number of constellations, without any regard to their absolute position, and to the order in which they follow each other; but we must not conclude thence, that the striking analogy between twelve nacshatras and an equal number of signs of the Thibetan and Greek zodiac is merely accidental. As the denominations of the lunar mansions have gradually descended even to the days, we may conceive, that they were become familiar to the people,

who were no doubt ignorant of the position of the stars of which the divisions of the ecliptic were composed. It is possible, that nations relapsed into barbarism had preserved but a confused remembrance of the names of the nacshatras; and that in reforming their calendar, they might have chosen among the names those of the signs of the solar zodiac, without following the order anciently adopted. It is possible also, and I am inclined to give the preference to this latter opinion, that the zodiac composed of twelve signs may have had its origin from an ancient lunar zodiac, in which the nacshatras were arranged in an order more analogous to that which we observe at present in the *dodecatemoria* of the people of Thibet and Tartary. In fact, the divisions of the ecliptic, which Sir William Jones, Colebrooke, and Sonnerat, have published, differ essentially from each other. The arrow, which according to one Indian writer is the eighth nacshatra, is only the twenty-third according to another. We shall see presently, in speaking of a Roman bas relief described by Bianchini, that in the East solar zodiacs formerly existed, which had the same signs, though placed in a different order. Moreover, the return of the Sun from the tropics toward the equator, and the phenomenon of the equal duration of the days and the nights, must have led to great changes in the figures

of the nacshatras, when a part only was employed to form the solar zodiac.

This intimate connexion between the lunar mansions and the signs of the zodiac is moreover evident in the names given by the Hindoos to the months and the years. These names, according to the curious investigations of Mr. Davis *, are not those of the dodecatemoria of the solar zodiac; they are taken from the nacshatras themselves, each month bearing the name of the lunar mansion, in which the full moon occurs. We have seen farther back, that at Thibet, in China, and among the Tartar nations, each year of the five indictions of the great cycle bears the name of one of the 12 animals of the solar zodiac. Among the Hindoos, the years take the name of the nacshatras in which Jupiter is at his heliacal rising. It is thus that *Aswini* (horse) or *Magha* (house) is the name of a year, of a month, and of a tithy, or lunar day; as at Mexico the sign *tochtli* (rabbit) or *calli* (house) presides at the same time over the year, the half lunation, and the day.

From the whole of these considerations it follows, that the division of the ecliptic into twelve signs probably had its origin from the division into 27 or 28 lunar mansions; and that

* On the cycle of sixty years, Asiat. Res. vol. 3, p. 217—261.

the solar zodiac was primitively a lunar zodiac, each full moon being nearly two nacshatras and a quarter, or 13° 20′ distant from that preceding. It is thus that the most ancient astronomy of nations is connected with the motions of the moon only. If it happen, that the twelve signs of the zodiac bear names that differ totally from those of the nacshatras, we must not hence conclude, that the stars themselves were distributed after a double division. In eastern Asia, the zodiac of twelve signs was, for a long time, only an abstract division *, while the zodiac of twenty-seven or twenty-eight nacshatras was alone a real stellar zodiac. I have been led to insist on the intimate connexion that exists between the two divisions of the ecliptic, to show, that both may have given birth to the signs of the Mexican zodiac.

Let us examine first the analogy between the denominations of the Mexican days, and the signs of the Thibetan, Chinese, Tartarian, and Mongul zodiac. This analogy is striking in the eight hieroglyphics called *atl, cipactli, ocelotl, tochtli, cohuatl, quauhtli, ozomatli,* and *itzcuintli.*

Atl, water, is often indicated by a hieroglyphic, the parallel and undulating lines of which remind us of the sign we employ to denote

* Bailly, Ast. Ind. p. 5; Ast. mod. tom. 3, p. 801.

Aquarius. The first *tse*, or asterism, of the Chinese zodiac, the rat *(Shou)*, is also frequently represented under the figure of *water* *. In the reign of the emperor Tchouen-hiu there was a great deluge; and the celestial sign Hiuen-hiao, which by its position answers to our Aquarius, is the symbol of this reign. Thus P. Souciet, in his Researches on the Cycles and the Zodiac, observes, that China and Europe agree in representing under different denominations the sign, which we name *Amphora*, or *Aquarius*. Among the western nations, the water that flows from the vase of Aquarius (χυσις υδατος) early formed a particular constellation (υδωρ), to which belonged the beautiful stars Fomalhaut and *Deneb kaitos*, as is evident † from several passages of Aratus, Geminus, and the scholiast of Germanicus.

Cipactli is a sea animal ‡. This hieroglyphic bears a strong analogy to Capricorn, which the Hindoos and other nations of Asia call *sea monster*. The Mexican sign indicates a fabulous animal, a whale with a horn in its forehead.

* Obs. mathem. du P. Souciet, published by P. Gaubil, Tom. 3, p. 33.

† Ideler, Sternnamen, p. 197.

‡ Gama, Descrip. histor. y cronol. de dos Piedras (Mexico, 1792), p. 27 and 100.

Gomara and Torquemada * call it *espadarte*, a name by which the Spaniards denote the narwal, the great tooth of which is known by the name of the unicorn's horn. Boturini took this horn for a harpoon, and erroneously translated *cipactli* by *serpent armed with harpoons*. As this sign does not represent a real animal, it is natural enough, that its form should vary more than that of any other sign. Sometimes the horn appears a lengthening of the muzzle, as in the famous fish *oxyrinchus*, represented in the place of the southern fish under the belly of Capricorn, in some Indian planispheres †: at other times the horn is entirely wanting. On casting our eyes on the figures in plate 23d and 27th, taken from very ancient drawings and reliefs, we see how much Valades, Boturini, and Clavigero were mistaken, in representing the first hieroglyphic of the Mexican days as a shark, or a lizard. In the manuscript in the Borgian museum, the head of cipactli resembles that of a crocodile; and this same name of crocodile is given by Sonnerat to the tenth sign of the Indian zodiac, which is our Capricorn.

Besides, the idea of the sea animal, cipactli, is connected in the Mexican mythology with the history of a man, who, at the epocha of the de-

* Conquista, fol. 119. Mon. ind., Tom. 3, p. 223.

† Philos. Transact., 1772, p. 353.

struction of the fourth sun, after having for a long time swam in the waters, saved himself alone, by reaching the top of the mountain Colhuacan. We have observed, that the Noah of the Aztecks, commonly called Coxcox, bears also the name of Teo-Cipactli, in which the word divinity, or *divine*, is added to that of *cipactli*. On looking into the zodiac of the nations of Asia, we find, that the Capricorn of the Hindoos is the fabulous fish *mahâran*, or *souro* *, celebrated for his exploits, and represented, from the most remote antiquity, as a sea monster with the head of an antilope †. As the inhabitants of India, like the Mexicans, often indicate the *nacshatras* (lunar mansions) and the *laquenons* (dodecatemoria) by the heads only of the animals, which compose the lunar and solar zodiacs, we ought not to be surprised, that the western nations should have transformed the mahara into Capricorn (αιγοκερως); and that Aratus, Ptolemy, and the Persian Kaswini, should have given it the tail of a fish. An animal, which, after having for a length of time inhabited the waters, takes the form of an antilope, and scales the mountains, reminds nations, whose disturbed imagination associates objects the

* Sonnerat, Voyage aux Indes, Tom. 1, p. 310. Bailly, Astr. ind., p. 210.

† Asiat. Researches, vol. 2, p. 335, No. 7.

most remote from each other, of the ancient traditions of Menou, Noah, and the Deucalions famous among the Scythians and people of Thessaly. It is true, according to Germanicus, that Deucalion, whom we may consider as the Coxcox, or the Teo-Cipactli of the Mexican mythology, was placed not in the sign of Capricorn, but in the sign that immediately follows it, in that of Aquarius (ὑδροχόος). In this circumstance there is nothing to surprise us; it rather confirms the ingenious opinion of Mr. Bailli on the ancient connexion of the three signs of the Fishes, Aquarius, and Capricorn, or the antilope fish *.

Ocelotl, tiger, the jaguar *(felis onca)* of the warm regions of Mexico; *tochtli*, hare; *ozomatli*, female ape; *itzcuintli*, dog; *cohuatl*, serpent; *quauhtli*, bird, are asterisms that bear the same names in the Tartar and Thibetan zodiacs. In the Chinese astronomy, the hare denotes not only the fourth *tse*, or sign of the zodiac; the Moon, from the remote period of the reign of Yao, was figured as a disk, on which a hare †, seated on his hinder feet, turns a stick in a vase, as if employed in making butter; a peculiar idea, which might have had its origin in the *steppes* of Tartary, where hares are abundant, and which are inhabited by shepherd na-

* Astr. moderne, Tom. 3, p. 297.

† Grosier, Hist. gen. de la Chine, p. 297.

tions. The Mexican ape, *ozomatli*, answers to the *heou* of the Chinese*, to the *petchi* of the Mantchous, and to the *prehou* of the people of Thibet; three names that denote the same animal. Procyon appears to be the ape *hanuan* †, so well known in the mythology of the Hindoos; and the position of this star, placed on the same line with the Twins and the pole of the ecliptic, corresponds very well with the place which the ape holds in the Tartar zodiac, between the Crab and the Bull. Apes are found also in the sky of the Arabians; they are stars in the constellation of the great dog, called *El-kurid* ‡ in the catalogue of Kazwini. I enter into these details respecting the sign *ozomatli*, because an animal of the torrid zone, placed among the constellations of the Mongul, Mantchou, Azteck, and Tolteck nations, is a very important point, not only in the history of astronomy, but also in that of the migrations of nations.

The sign *itzcuintli*, dog, answers to the last sign but one of the Tartar zodiac, to the *ky* of the Thibetans, to the *nokai* of the Mantchous, and to the *in* of the Japanese. P. Gaubil informs us, that the dog of the Tartar zodiac is our dodecatemorion of the *Ram*; and it is very re-

* Deguignes, Hist. des Huns, Tom. 1, p. 47.

† Dupuis, Origine des Cultes, Tom. 3, p. 363.

‡ Ideler, Sternnamen, p. 238, 248, 413.

markable, that, according to Le Gentil, among the Hindoos, though this people was unacquainted with the series of signs which begins with the rat, the place of the *Ram* is sometimes occupied by a *marron dog*. In the same manner, among the Mexicans, *itzcuintli* denotes the wild dog; for that which is tame is called *techichi*. Mexico formerly swarmed with carnivorous quadrupeds * of a species between the wolf and the dog, which Hernandes has but imperfectly described. The race of these animals, known by the names of *xoloitzcuintli*, *itzcuintepotzotli*, and *tepeitzcuintli*, is perhaps not yet entirely destroyed; but probably withdrawn into the most desert and solitary forests. In the part of the country through which I passed, I have never heard any mention of a marron dog. Le Gentil † and Bailly were mistaken, when they asserted, that the word *mecha*, which denotes our ram, signifies a *marron dog*. This word of the Sanscrit language is the ordinary name of the ram, it is employed ‡ in a very poetical manner by an Indian author, who describes the combat of two warriors, saying, "that by their heads they were two mecha "(rams); by their arms, two elephants; by their "feet, two noble coursers."

* See my Tableaux de la Nature, Tom. 1, p. 117.

† Le Gentil, Voyage, Tom. 1, p. 247.

‡ Observation de Mr. de Chezy.

The following table unites the signs of the Tartar zodiac with those of the days of the Mexican calendar:

ZODIAC OF THE MANTCHOU-TARTARS.	ZODIAC OF THE MEXICANS.
Pars, tiger.	*Ocelotl*, tiger
Taoulai, hare.	*Tochtli*, hare, rabbit.
Mogai, serpent.	*Cohuatl*, serpent.
Petchi, ape.	*Ozomatli*, ape.
Nokai, dog.	*Itzcuintli*, dog.
Tukia, bird, hen.	*Quauhtli*, bird, eagle.

Without returning to the hieroglyphics water (*atl*) and the sea monster (*cipactli*), which exhibit a striking analogy with the asterisms of Aquarius and Capricorn, the six signs of the Tartar zodiac, found in the Mexican calendar,

are sufficient to render it extremely probable, that the people of the two continents drew their astrological ideas from a common source. Those features of resemblance, on which we insist, are not taken from uncouth or allegorical paintings, susceptible of being interpreted agreeably to the nature of the hypothesis which we seek to establish. If we consult the works composed, at the beginning of the conquest, by Spanish or Indian authors, who were ignorant even of the existence of a Tartar zodiac, we shall see, that at Mexico, from the seventh century of our era, the days were called *tiger, dog, ape, hare,* or rabbit; as throughout the whole of eastern Asia the years still bear the same names in the Thibetan, Mantchou-tartar, Mongul, Calmuck, Chinese, Japanese, Corean, and all the languages of Tonquin and Cochin China *.

It may be conceived, that nations, which have never had any intercourse with each other, may make equal divisions of the ecliptic into 27 or 28 parts, and give each lunar day the name of the stars near which the Moon is placed in its progressive motion from west to east. It appears very natural also, that nations either of shepherds or hunters should denote these constellations, and these lunar days, by the names of the animals which are the constant objects of their affections

* Souciet, Tom. 2, p. 138.

or their fears. The sky of the nomade tribes will be peopled with dogs, stags, bulls, and wolves, without its being at all necessary for us to conclude, that these tribes have formerly made part of the same people. We must not confound objects that resemble each other from mere accident, or from a similarity of situation, with those that attest a common origin, or ancient communications.

But the Tartar and Mexican zodiacs contain not only the animals peculiar to the climates which these people inhabit at present; we find also apes, and tigers, two animals that are unknown on the elevated plains of central and eastern Asia, to which a great elevation gives a colder temperature than that which reigns toward the west under the same latitude. The people of Thibet, the Monguls, the Mantchous, and the Calmucks, have therefore received from a more southern country the zodiac, which is too exclusively called the Tartar cycle. The Toltecks, the Aztecks, the Tlascaltecks flowed from the north toward the south: we are acquainted with Azteck monuments as far as the banks of the Gila, between 33° and 34° of northern latitude. History shows us the Toltecks coming from regions still more northerly. These colonists, issuing from Aztlan, did not arrive as barbarous hordes; every thing that appertained to them betokened the remains of ancient civiliza-

tion. The names given to the cities which they built were the names of places which their ancestors inhabited; their laws, their annals, their chronology, the order of their sacrifices, were modelled on the knowledge they had acquired in their primitive country. But the apes and the tigers, which figure among the hieroglyphics of the days, and in the Mexican tradition of the *four ages or destructions of the Sun*, do not inhabit the northern part of New-Spain, and the north-west coast of America. Consequently the signs *ozomatli* and *ocelotl* render it singularly probable, that the zodiacs of the Toltecks, the Aztecks, the Monguls, the Thibetans, and so many other nations now separated by a vast extent of country, originated on one and the same point of the ancient continent.

The lunar mansions of the Hindoos, in which we also find an ape, a serpent, a tail of a dog, and the head of an antelope, or of a sea-monster, exhibit still other signs, the names of which remind us of the calli, acatl, tecpatl, and ollin, of the Mexican calendar.

INDIAN NACSHATRAS.	MEXICAN SIGNS.
Magha, house.	*Calli*, house.
Venou, cane.	*Acatl*, cane.
Crittica, razor.	*Tecpatl*, flint, knife of stone.
(*Sravana*, three prints of feet).	(*Ollin*, motion of the Sun, represented by three prints of feet.)

We shall first observe, that the Azteck word *calli* has the same signification as the *kuala*, or

kolla *, of the Woguls, who dwell on the banks of the Kama and Irtisch; as *atel* (water) in Azteck, and *itèls* (river) in Vilel, recall to mind the words *atl, atelsh, etel,* or *idel,* (river) in the language of the Mongul Tartars, Tscheremisses, and Tschouwasses †. The denomination of *calli,* house, very well denotes a station or lunar mansion (in Arabic, *menazil el kamar*) a place of repose. It is thus that among the Indian nacshatras, beside the *houses* (magha and punarvasu) we also find *bedsteads* and *matrasses.*

* The Mexican sign *acatl,* cane, is generally figured as two reeds tied together ‡. But the stone found at Mexico in 1790, and which offers the hieroglyphics of the days, represents the sign acatl in a very different manner. We recognise in it a bundle of reeds, or a sheaf of maize contained in a vase. We shall observe on this occasion, that, in the first period of thirteen days of the year tochtli, the sign *acatl* is constantly accompanied by *Cinteotl,* who is the *goddess of maize,* Ceres, the divinity who presides over agriculture. Among the western nations, Ceres is placed in the 5th dodecatemorion: we even find very ancient zodiacs, in

* Vater. Amer. Bevolker, p. 160.

† Engel, Ungar. Gesch. T. 1, p. 346, 361, Georgi, Reisen. B. 2, p. 904. Thwrocz, Chron. Hungaror., p. 49.

‡ Plate 27.

which a bundle of ears of corn * fills up the whole of the place, which Ceres, Iris, Astrea, or Erigone, ought to occupy in the sign of the harvests and vintages. It is thus we find, from the remotest antiquity, among the most distant nations, the same ideas, the same symbols, the same tendency to refer natural phenomena to the mysterious influence of the stars.

The Mexican hieroglyphic *tecpatl* indicates a keen edged stone of oval form, lengthened at both ends, like those which were made use of as knives, or which were fastened to the end of a pike. This sign recalls to mind the *crittica* or sharp knife of the lunar zodiac of the Hindoos. On the great stone represented in the 23d Plate, the hieroglyphic tecpatl is figured in a manner somewhat different from the form commonly given to this instrument. The silex is pierced through the centre, and the opening seems destined to receive the hand of the warrior, who makes use of this weapon with two points. We know, that the Americans had a peculiar art of boring the hardest stones and working them by friction. I have brought from South America, and deposited at the Museum at Berlin, a ring of obsidian, which was a girl's bracelet, and forms a hollow cylinder near seven centimetres

§ Ideler, Sternnamen, S. 172. Dupuis, Origine des Cultes, Tom. 2, p. 228—234. Atlas, p. 6.

in diameter, four centimetres high, and three millimetres thick. We can scarcely conceive how a vitreous and fragile substance could be reduced to the state of so thin a plate. Besides, *tecpatl* differs from obsidian, a substance which the Mexicans called *iztli*; jade, hornstone, and flint being confounded under the denomination of *tecpatl*.

The sign *ollin* or *ollin-tonatiuh*, presides, in the beginning of the cycle of 52 years, over the seventeenth day of the first month. The explanation of this sign has greatly embarrassed the Spanish monks, who, without the slightest elementary notions of astronomy, attempted to explain the Mexican calendar. The Indian authors translate *ollin* by *motions of the Sun*. When they find the number *nahui* added, they render *nahui ollin* by the words *Sun* (tonatiuh) *in his four motions*; sometimes (Plate 37) like two ribands intertwined, or rather like two portions of curves, which cross each other, and which have three perceptible inflections at their summits; sometimes (Plate 23) like the solar disk surrounded with four squares, which contain the hieroglyphics of the numbers one *(ce)* and four *(nahui)*; at other times like *three prints of feet*. The four squares allude, as we shall soon explain, to the famous tradition of the four ages, or four destructions of the world, which took place on the days 4 *tyger, nahui ocelotl*; 4 *wind, nahui*

ehecatl ; 4 *rain, nahui quiahuitl;* and 4 *water, nahui atl ;* in the years *ce acatl,* 1 cane ; *ce tecpatl,* 1 flint ; and *ce calli,* 1 house. With these same days the solstices, the equinoxes, and the passages of the Sun across the zenith of the city of Tenochtitlan, very nearly corresponded.

The representation of the sign *ollin* by three *xocpalli,* or prints of the feet, as we often find them in the manuscripts at the Vatican, and in the Codex Borgianus, fol. 47, n. 210, is remarkable from the analogy which it seemingly offers with *sravana,* or the *three prints of the feet of Vishnou,* one of the mansions of the lunar zodiac of the Hindoos. In the Mexican calendar, the three prints indicate either the traces of the Sun in its passage across the equator, and its motion towards the two tropics, or the three positions of the Sun in the zenith, in the equator, and in one of the solstices. It is possible, that the lunar zodiac of the Hindoos contained some sign, which, like that of the Balance, might refer to the course of the Sun. We have seen, that the zodiac of twenty-eight signs may have been transformed by degrees into a zodiac of twelve mansions of the full Moon ; and that some nacshatras may have changed their denomination, since, from the knowledge of the annual motion of the Sun, the *zodiac of the full Moons* is become a real *solar zodiac.* Crishna, the Apollo of the Hindoos, is in fact no other than Vishnou, under

the form of the Sun *, which is more particularly worshipped under the name of the god *Sourya*. Notwithstanding this analogy of ideas and of signs, we think, that the three footsteps, which form the twenty-third nacshatra, *sravana*, have only an accidental resemblance with the three prints of feet, that represent the sign *ollin*. M. de Chezy, who was very profoundly versed in the Persian and Sanscrit languages, observes, that the *sravana* of the Indian zodiac alludes to a legend highly distinguished among the Hindoos, and recorded in the greater part of their sacred books, particularly in the Bhagavat-Pouranam. Vishnou, desirous of punishing the pride of a giant, who thought himself as powerful as the gods, presents himself under the form of a dwarf, and entreats him to grant in his vast empire the space he can measure with three of his steps; the giant assents with a smile, and at the instant the dwarf rises to so prodigious a stature, that in two steps he measures the space between Heaven and Earth. As he asks, at the third step, where he can place his foot, the giant recognises the god Vishnou, and prostrates himself before him. This fable so well explains the figure of the nacshatra *sravana*, that it would be difficult to admit the connexion of this sign with that of *ollin*; as *cipactli*, and the Mexican Noah,

* Asiatic Researches, vol. 1, p. 200.

Teo-Cipactli, are connected with the constellation of Capricorn; and that of Deucalion, anciently placed in Aquarius.

We have now explained the correspondencies that exist between the signs of which the different zodiacs of India, Thibet, Tartary, and the hieroglyphics of the days and years of the Mexican calendar are composed. We have found, that in these correspondencies, the most numerous and striking are those of the cycle of the twelve animals, which we have designated under the name of the zodiac of Tartary and Thibet. To finish a discussion, the results of which are so important to the history of the ancient communications of nations, we shall examine more closely this last zodiac; and prove, that, in the Asiatic system of astrology, with which the Mexican astrology appears to have a common origin, the twelve signs of the zodiac preside not only over the months, but also over the years, the days, the hours, and even over the smallest parts of the hours.

When we consider, that the nations of eastern Asia employ at the same time divisions of the ecliptic into twenty-seven or twenty-eight, into twelve, and into twenty-four parts; and that the same signs of the solar zodiac bear denominations, and often figures, entirely different; we are tempted to believe, that this multiplicity of signs must produce an extreme confusion in the limits

assigned to the zodiacal constellations. Among the Hindoos, for instance, we find, beside the nacshatras, or lunar mansions, twelve *laquenons*,* the names of which are the same as those of the signs of the Greek and Egyptian zodiac. The Chinese divide the ecliptic in three manners, namely, into twenty-eight nacshatras, which they call *che* or *eul-che-po-sieou* * ; into twelve *tse*, which answer to our signs, but which bear names, partly mystical, and partly borrowed from the productions of the country, as *great splendor*, *profound void*, *head and tail of the quail* † ; and into twenty-four *tsieki*. The denominations of these *tsieki*, or *half-tse*, relate to the climate, and the variations of temperature ‡. The Chinese have besides two other cycles of twelve signs ; that of the *tchi* ; and that of the animals, the names of which are identic with those of the cycles of Thibet and Tartary ; seven *che* answer to three *tse*, as six *tsieki* answer to three *tchi*, and three *celestial animals*. The cycle of these twelve Chinese animals, among which we have found the ape, the tiger, the rat (symbol of water), the dog, the bird, the serpent, and the hare, of the Mexican calendar, gives the

* Souciet and Gaubil, vol. 3, p. 80.

† L. c, vol. 3, p. 98.

‡ L. c, vol. 3, p. 94. Bailly, Astr. ind. p. 96.

names to the cycle of twelve years, as well as to the small period of twelve days. The twelve animals are used, says P. Gaubil *, to denote the twelve moons of the year, the twelve hours of the day and the night, and the twelve celestial signs. But all these divisions into twelve parts, marked by different names, are, in the east of Asia, only abstract or imaginary divisions: they serve to recall to mind the motion of the Sun in the ecliptic; but the real starry zodiac, as Mr. Bailly very well observes †, and as is confirmed by the more recent researches of Sir William Jones and Mr. Colebrooke, consists of the twenty-eight lunar mansions. It is true, they say in China, that the Sun *enters into the Ape, or the Hare*, as we say that it enters into the Twins or the Scorpion; but the Chinese, the Hindoos, and the Tartars class the stars only according to the system of the nacshatras. The division of the zodiac into twenty-seven or twenty-eight parts, known from Yemen to the plains of Turfan and Cochinchina, belongs, as well as the small period of seven days, to the most ancient monuments of astronomy.

Wherever we observe at the same time several divisions of the ecliptic, differing not in the numbers of the asterisms, but in their denominations,

* Souciet, vol. 2, p. 156, 174.

† Astr. ind., p. 5.

as the *tse*, the *tchi*, and the *celestial animals* of the Chinese, of the people of Thibet, and of the Tartars, this multiplicity of signs is probably owing to a mixture of several nations, who have been subdued one by the other. The effects of this mixture, those of the influence exercised by the conquerors on the vanquished people, are particularly manifest in the north-east part of Asia; the languages of which, notwithstanding the great number of Mongul and Tartar roots they contain, differ so essentially * from each other, that they seem to defy any methodical classification. In proportion as we remove from Thibet and Indostan, we see the uniform type of civil institutions, of knowledge, and of religious rites, weaken and disappear. Now, if the hordes of eastern Siberia, among whom the dogmas of Bouddhism have evidently penetrated, appear nevertheless to be connected only by feeble ties to the civilized nations of southern Asia, ought we to be surprised, that, in the New Continent, along with some features of analogy in traditions, in chronology, and in the style of their remains, we should discover so great a number of striking differences? When nations of Tartar or Mongul origin, transplanted to foreign shores, mingled with the indigenous hordes of America, have found a road toward civilization

* Adelung, Mithridates, vol. 2, p. 533 and 560.

with great difficulty, their languages, their mythology, their divisions of time, every thing assumes a character of individuality, that almost effaces the primitive type of their national physiognomy.

In fact, instead of the cycles of sixty years, of years divided into twelve months, and small periods of seven days, used among the nations of Asia, we find among the Mexicans cycles of fifty-two years, years of eighteen months of twenty days each, half decades, and half lunations of thirteen days. The system of periodical series, the correspondent terms of which serve to denote the dates of the days and the years, is the same in both continents; a great many of the signs that compose the series in the Mexican calendar are borrowed from the zodiac of the nations of Thibet and Tartary; but neither their number, nor the order in which they follow each other, are those observed in Asia.

The Tartarian zodiac does not begin, like that of the Hindoos, with the Dog, which answers to our sign of the Ram, but with the Rat, which represents Aquarius *. This same zodiac has besides the striking particularity, that the celestial animals are reckoned contrary to the order of the signs: instead of placing them in that which is marked

* Souciet, vol. 2, p. 136. Bailly, Ast. ind., p. 212. Langles, notes du Voyage de Thunberg, p. 319.

by the motion of the Sun in the ecliptic from west to east, the Thibetans, the Chinese, the Japanese, and the Tartars, reckon the signs in the following order; *Rat*, or Aquarius; Ox, or Capricorn; Tiger, or Sagittary; Hare, or Scorpion, &c. This singular habit has perhaps its cause in the circumstance, that the twelve zodiacal constellations in their passage over the meridian, preside over the different hours of the day and the night. As they share in the general motion of the celestial sphere from east to west, they are arranged in the order, according to which they rise or set one after the other.

In the Mexican calendar, the signs of the days which are identical with the signs of the Tartar cycle, those of the dog, the ape, the tiger, and the horse, are so placed, that no analogy of relative position can be recognised between them. *Cipactli*, which we have proved to be the antilope-fish, is the first asterism, as Capricorn seems to have been among the Egyptians *. Among the Mexican signs nearly the following order prevails, cipactli, cohuatl, tochtli, itzcuintli, ozomatli, and ocelotl; or, substituting the names of our signs, Capricorn, Virgo, the Scorpion, the Ram, the Twins, and Sagittarius. Is this difference in the arrangement of the signs mere-

* Fragmentum ex Gazophylacio Card. Barberini (Kircheri Œdipus, 1653, vol. 3, p. 160).

ly apparent? and does it arise from a cause analogous to that, which, according to the testimony of Herodotus and Dion Cassius *, led the people of the east to name the days of the week after the planets placed in a very different order from that assigned them by the astronomy of the Hindoos, the Egyptians and the Greeks? Considering the number of terms, that compose the series of the hours, and that of the Mexican hieroglyphics, we feel, that this hypothesis is not admissible.

In speaking of the analogy observable between the names of several lunar mansions, and those of the signs of the solar zodiac, we have explained how the primitive order of the asterisms may be changed, when nations, replunged into barbarism, endeavour from an obscure remembrance, to reestablish the system of their chronology. Although the supposition of these changes is obvious, we are nevertheless not forced to admit it, in order to explain the dissimilitude in the position of the same signs in the Tartar and Mexican zodiacs. The Hindoos preserve several divisions of the ecliptic into twenty-seven or twenty-eight nacshatras, the names of which are in great part the same, without being placed in the same order. An ancient monu-

* Dion Cassius, lib. 37, c. 19. (Ed. Fabric., 1750, tom. 1, p. 124). Herod., lib, 2, c. 89.

ment, made known by Bianchini in the beginning of the last century, proves, that there existed in the East solar zodiacs, in which are found the Tartarian asterisms of the Horse, the Dog, the Hare, the Dragon, and the Bird, arranged so that the Dog answers to the Bull, and not to the Ram of the Greek zodiac, while the Dog and the Hare are separated not by four, but only by two signs. Now if in Asia the same nacshatras, and the same dodecatemorions, have not always followed the same order in the different lunar and solar zodiacs, we must not be surprised at the transposition of the signs observed in the cycle of the hieroglyphics of the day among the Mexicans. It is even possible, that this transposition may be merely apparent, and may appear real to us, because we can compare the Tolteck and Mexican calendars only to the cycles which we find at present among the Tartars and the Thibetans. Perhaps other nations of eastern Asia have communicated their zodiac to those warlike hordes, which have inundated Mexico since the seventeenth century. Perhaps in traversing the elevated plain of central Asia, and examining more attentively the remains of civilization preserved in little Buckharia, at Turfan, or near the ruins of Karacorum, the ancient capital of the empire of the Monguls, travellers may some day discover the

same series of signs, as is contained in the zodiac of the Mexicans.

'The astronomical monument, of which Bianchini sent a drawing to the academy, is a marble fragment preserved in the Vatican, and found at Rome in 1705. We propose here to examine it with particular attention, because it seems well adapted to throw light on the divisions of the ecliptic used in Mexico and eastern Asia. It exhibits, in five consecutive zones, the figures of the planets, the decani, the asterisms of the Greek zodiac repeated twice, and the signs of another zodiac, which has the greatest analogy with that of the Tartar nations. We may be surprised, that Fontenelle, Bailly, Dupuis, and other distinguished men of letters, who have written on the origin of the zodiacs, should have taken this bass-relief for an Egyptian work *. According to the observation of Mr. Visconti, the style of the figures representing the planets evidently proves, that it was sculptured in the time of the Cæsars. In this mutilated monument we recognise, among the signs of the interior zone, a horse, a crab, a serpent, a dog that

* Hist. de l'Acad. des Sciences, 1708, vol. 1, p. 110. Bailly, Hist. de l'Astr. anc., p. 493 and 504. Dupuis, Origine des Cultes, vol. 1, p. 180. Hager, Illustraz. d'uno Zodiaco orientale, 1811, p. 15.

bears some likeness to the wolf, a hare, two birds, one of which seems placed opposite to a serpent, and two quadrupeds, one with a long tail, and the other with goat's horns. As the asterisms of the Greek zodiac were arranged one by one with those of the unknown zodiac, we see, that the Horse and the Hare answer, as in the Tartar dodecatemorions, to our signs of the Lion and the Scorpion. The following table exhibits the order, in which the asterisms are placed in the planisphere of Bianchini. I have added the signs of the Tartar cycle, of which we found vestiges among the nations of the New Continent.

ZODIAC OF BIANCHINI.		TARTAR CYCLE.
EXTERIOR ZONE.	INTERIOR ZONE.	
Sagittarius.	*Bird.*	Tiger.
Scorpion.	Hare.	Hare.
Balance.	*Goat.*	Dragon.
Virgin.	*Animal with a long tail.*	Serpent.
Lion.	Horse.	Horse.
Crab.	Crab.	Sheep.
Twins.	Serpent.	Ape.
Bull.	Dog or Wolf.	Hen.
Ram.	*Bird.*	Dog.
Fishes.	.....	Hog.
Aquarius.	.....	Rat.
Capricorn.	.....	Ox.

The names of the animals, which are too much mutilated to be known with certainty, are printed in *italics;* the asterisms of the Greek sphere, which are entirely erased, are distinguished in the same manner. I have arranged these last contrary to the order of the signs, according to the practice of the Tartarian nations.

It is remarkable enough, that, in this curious monument, the planets and the decani, the last of which only are figured in the Egyptian style with heads or masks of animals, are found placed in contrary directions. Though in the two zones, which represent the Greek zodiac, four signs are repeated under the same forms, we must not thence conclude that the others were equally identic. It were above all to be wished, that the Twins, and Pan, or Capricorn, had been preserved in the two zones; for the sculptor seems to have had the intention of uniting the zodiacs of different nations, and the heterogeneous forms* given to the same asterisms among the Chaldeans, the Egyptians, and the Greeks. The Twins are represented by two figures, which Mr. Bailly thought to be of different sexes, one of which holds a club, and the other a lyre. It is under this same form, that this sign is described in the *Astronomicon* of Hyginus†; and thus that it is figured in the Sanscrit verses of the poet Sripeti: "the couple, *mithouna*," says this Hindoo writer, "is composed of a girl,

* Eratosthenis Cataster., ed. Schaubach., 1795, page 21. Hygin. Poeticon Astr., lib. 2, c. 28; lib. 3, c. 27. (Auctores Mythographi Latini, ed. van Stuveren, 1742, tom. 2, page 481—528).

† Lib. 3, c. 21. (Auct. Mythograph., tom. 2, page 523). Du Choul, Discours de la Religion des Anciens Romains, 1556, page 180. Ideler, Sternnamen, s. 161.

who plays on the vina, and of a young man, who brandishes a club *."

The interior zodiac contains, like that of the Thibetans, the Chinese, and the Tartars, only animals, real ζωδια. In the Greek sphere, half the signs are formed of animals found in nature, the other half is composed of human figures, and fabulous or allegorical beings. The Balance, ζυγος, or λιτρα, is held sometimes by the claws, χηλαι, of the Scorpion †; at others by a male figure, as in the planisphere of Bianchini, and in the Indian zodiac; and at others by the Virgin, who in this case assumes the name of Astrea, δικη. The signs of the lunar mansions, or the hieroglyphics of the days of the Mexican calendar, are represented both by animals and inanimate objects. If we adopt the ingenious idea of Mr. Hager, according to which the sacred stone, brought by Michaux from the banks of the Tygris, is an ancient zodiac, we shall find, that, among the Chaldeans, the series of the real ζώδια was also interrupted by altars, towers, and houses ‡. This last fact is favourable to the hypothesis, that the dodecatemorions owe their origin to the lunar mansions, or houses. The same stone appears to offer another analogy. In

* Asiat. Res. vol. 2, page 335.

† Manil., lib. 1, v. 609.

‡ Illustrazione d'uno Zod. Orientale, cap. 8, p. 39, tav. 2.

the Tartarian cycle, the tiger corresponds to Sagittarius, often indicated merely by an arrow. In the zodiac described by Mr. Hager, we find, beside the wolf, a marron dog, and Capricorn, or the Antelope-fish, an arrow, which represents the river Tygris. This analogy is merely accidental; for the name of the river has nothing in common with that which the animal, the tiger, bears in the East.

When we recollect, that the zodiac which contains a dog, a hare, and an ape, belongs exclusively to Eastern Asia, and that it has probably passed thence into America, we are surprised to see, that it was known at Rome in the first ages of our era, the period at which the planisphere of Bianchini was sculptured. The astrologers, or Chaldeans, established in Greece and in Italy, had no doubt communications with those of Asia; and these communications must have become more frequent and extensive, in proportion as astrology was more in vogue among the people, and at the court of the Cæsars. Of eight signs, which are recognisable in the planisphere of Bianchini, there is only one, the Crab, which does not belong to the Tartar zodiac. The hare, which is found among the Thibetans and Mexicans, has the legs somewhat longer, but is sufficiently characterized by its place in the Scorpion. I am ignorant why Mr. Bailly took the dog, or wolf, for a hog, which

animal nevertheless is also in the Tartarian zodiac: it corresponds to the sign of the Fishes of the Greek sphere; and, what is very remarkable, in the planispheres of the temple of Tentyra, a figure holding a hog in its hand is seen twice near this same sign*. The monument described by Bianchini is so much the more interesting, as we recognise in no astronomical work, either Greek or Latin, not even in the Saturnalia of Macrobius, written in the time of Theodosius, the traces of this cycle of animals, which the Mouguls, and other Tartar hordes, who ravaged Europe, undoubtedly used in their chronology: and with which we have become well acquainted only from our communications with China and Japan. It seems strange, that the eloquent historian of the academy, Fontenelle, should not have remembered, that astrological reveries are intimately connected with the first notions of astronomy; and that they were of service in throwing light on the ancient communications of nations with each other. "The monument," says he, "in which Bianchini sought explanations, belongs to the history of the folly of mankind, and the academy has something better to do, than waste its time in researches of this kind."

In resuming what we have stated respecting

* Denon, Voyage, Pl. 130 and 132.

the different divisions of the ecliptic, and the signs that preside, in both Continents, over the years, the months, the days, and the hours, we find the following results. Among the nations that have turned their attention to the starry vault, the lunar zodiac, divided into twenty-seven or twenty-eight mansions, is more ancient than the zodiac in twelve parts, which, from being at first only a zodiac of full-moons, is become a solar zodiac. The names of the months are sometimes chosen among the lunar mansions, as with the Hindoos; at other times they are those of the dodecatemorions, as in the Dionysian year. On the banks of the Ganges, they still say, the months Arrow, House, or Head of the Antilope; as in the time of Ptolemy-Philadelphus they said at Alexandria, the months Didymon, Parthenon, and Aegon, months of the Twins, the Virgin, and Capricorn *. An intimate connexion is observed between the names of the dodecatemorions and those of the nacshatras; among several nations, the latter have passed to the lunar days. Beside the real division of the ecliptic, which is a zone of the starry heaven, there still exists, and especially in Eastern Asia, divisions of the time, which the Sun employs in returning nearly to the same stars, or the same point of the horizon. These cycles, generally

* Ideler, Hist. Untersuch., s. 264.

composed of twelve or twenty-four parts, according to the number of the lunations, or half-lunations, that have elapsed, belong rather to chronology, than to astronomy; they present only an ideal division of the ecliptic, of which each part takes a name and a particular sign. Such are the Tartarian animals, the *tse* and the *tsieki* of the Chinese. These signs, which measure only the time, and subdivide the seasons, may be invented by nations, who do not fix their attention on the stars. We may find a real zodiac composed of twelve signs, which preside over the months; and, by the contrivance of periodical series, over years, days, and hours, even in the lower regions of Peru, where a thick cloud of vapors withholds the view of the stars from the inhabitants, without concealing from them the disks of the Sun and Moon. The signs of the ideal zodiac, the complete revolution of which (the circle, *annulus*) forms a year (*annus*, ἐνιαυτός), are easily transferred to the constellations themselves; and hence the *division of time*, becomes a *division of the sphere.*

We shall not discuss whether the zodiac of the Hindoos, the Chaldeans, the Egyptians, and the Greeks, had not also been originally * a cycle, the signs of which pointed out the variations of

* Rhode, Versuch ueber das Alter des Thierkreises, 1809, s. 15 and 101.

the climate in a country subject to periodical inundations. The unequal extent occupied by the Virgin and the Crab, and the want of connexion* observed between the figures of the dodecatemorion and the extrazodiacal constellations, appear to give some probability to this supposition. We see in fact, that there are nations, who employ at the same time several divisions of the ecliptic; and that the signs, which, in one nation, belong to constellations, are with another nation only divisions of time. Perhaps there existed formerly some region of Asia, in which the Tartarian cycle of the celestial animals, which Bailly considers as the oldest of the zodiacs, while Dupuis† strives to make it pass for a table of paranatellons, was a real division of the stars placed in the ecliptic. In order to understand clearly the relations, which from the remotest periods were formed between the nations of both continents, we should not lose sight of the intimate connexion, that exists between the imaginary and the real zodiac, between the cycles and the constellations of the ecliptic, between the mansions and the divisions of the solar orbit.

The same considerations on the progressive

* Recherches sur l'Origine des Constellations de la Sphere Grecque, 1807, p. 65.

† Origine des Cultes, tom. 3, page 362.

unfolding of astronomy prevent us from deciding, whether the hieroglyphics of the days and the years of the Tolteck and Azteck calendar, like the Chinese *tse* and *tchi*, belong only to an imaginary or fictitious zodiac, or whether they denote zodiacal constellations. We have already observed, that the great wheels, which represent the cycle of fifty-two years, were encircled by a serpent biting his tail, and with four folds to mark the four indictions. The hieroglyphics being arranged in periodical series of four terms, and the intervals that separate one fold from another containing twelve years, each knot of the serpent corresponded to another sign. I think these four knots, denoted by the asterisms *rabbit*, *cane*, *silex*, and *house*, alluded to the points of the solstices and the equinoxes, or the intersection of the colures with the ecliptic. The most ancient division of the zodiac, says Albategni *, is that into four parts. In fact, in the first year of the great cycle of the days *matlactli tochtli* (10 rabbit), *chicuei acatl*, (8 cane), *chicome calli*, (7 house), and *matlactli tecpatl*, (11 flint), answered to the 22d of December, the 22d of March, the 20th of June, and the 23d of September. These days are but little distant from the equinoxes and solstices; and as the Mexican

* De Scientia Stellarum, cap. 2, (ed. Bonon., 1645, page 3).

year began in the winter solstice, like the year of the Chinese, it is natural enough, that, in the periodical series of the signs of the years, the first term should be *tochtli*, though in the series of the twenty signs of the days *tochtli* is preceded by *calli*.

We also know, from the notions which Siguenza derived from the works of Ixtlilxochitl, that the four folds of the serpent, and the four asterisms which belong to them, indicate the four seasons, the four elements, and the cardinal points. Earth was dedicated to the rabbit, and water to the cane; and we have seen, in speaking of the signs of the night, that Tepeyollotli, one of the divinities who dwelt in caverns, and Cinteotl, the goddess of the harvests, accompany the diurnal signs rabbit and cane. The sense of these allegories is too clear to want explanation. The four signs of the equinoxes and solstices, chosen in a series of twenty signs, recall to mind also the four *royal stars*, Aldebaran, Regulus, Antares, and Fomalhaut, celebrated throughout Asia, and presiding over the seasons*. In the New Continent, the indications of the cycle of fifty-two years form, as it were, the four seasons of the great year; and the Mexican astrologers were pleased in seeing one of the four equi-

* Firmicus, lib. 8, c. 1.

noxial signs presiding over every period of thirteen years.

Though the same signs were used and arranged in the same order, in every part of the Mexican empire, some difference was nevertheless observed in the choice of the solstitial and equinoxial sign placed at the head of the *xiuhmolpilli*, or *ligature* of the years. The inhabitants of Tezcuco began the great year by *acatl*; those of Teotihuacan, by *calli*; the Toltecks by *tecpatl*. It has been doubted, whether, among the same nations, notwithstanding the difference we have just indicated, the first day of the year was constantly the sign *cipactli*; but the fragments of their historic annals, preserved in the Boturini museum, and in the collection of P. Pichardo, at Mexico, seem to indicate, that the variety of dates proceeds from the time at which the intercalation of the thirteen days was made, and not from the different manner of marking the beginning of the cycle.

We are ignorant whether the twenty signs of the Mexican days are the remains of an ancient division of the zodiac into twenty-eight lunar mansions; or whether with the four signs of the night, the names of which are not found among those of the days, they anciently formed twenty-four asterisms, like the *tsieki* of the Chinese zodiac. An equal number of signs had perhaps

been placed between the four equinoxial and solstitial signs; perhaps the number of twenty was derived only from a division of the visible hemisphere into ten parts. It is certain, that this same division engaged the Mexicans to divide the year of three hundred and sixty days into eighteen months; and that it became the basis of a system, of which we find no vestige in the Old Continent. I am induced however to think, that the division into eighteen months of twenty days is posterior to another into twelve moons of thirty days; for the method of making a sign of the zodiac preside over each day, and of determining the number of the months by the return of the periodical series, must have been adopted later than the more obvious idea of dividing the year according to the number of lunations it contains. Although the divisions of the ecliptic into twenty-four *tsiëkis**, and into thirty-six *decani*, exist in Asia, these divisions have never led to years of ten or fifteen months: and, if antiquity speaks of those of four, six, or twenty-four months, these divisions do not depend on the use of periodical series, like the eighteen months of the Mexican year, but on the importance assigned to the equinoxial and

* Amiot, in les Mémoires concernant les Chinois, vol. 2, p. 161. Gaubil, Traité de l'Astronomie Chinoise, p. 32.

solstitial points, to the cycles of sixty days, and the duration of the half-lunations.

We have already observed, that the Mexican year, like that of the Egyptians and Persians, was composed of three hundred and sixty days, to which were added five epagomena, termed furtive *(musteraka)*, or useless *(nemontemi)*. If the Mexicans had been unacquainted with the excess of the duration of the revolution of the Sun over three hundred and sixty-five days, the beginning of their year, like that of the vague year of the Egyptians, would have passed, in about one thousand five hundred and eight years, through every season and every point of the ecliptic. Four centuries had elapsed after the reform of the Mexican calendar in 1091, before the arrival of the Spaniards. The writers of that time affirm, that at this epocha the calendar of the Europeans coincided within a few days with the Azteck calendar: and the accurate calculation of the eclipses of the Sun marked in the Mexican annals even render it probable, that the difference observed between the two calendars proceeded wholly from our own not having yet undergone the Gregorian reform. Let us now examine what was the mode of intercalation, by which the Mexicans avoided the errors of their chronology.

The Mexican year being solar, and not lunar,

admitted a far more simple mode of intercalation, than that of the Greeks and Romans before the introduction of the Merkidinus. If we cast our eyes upon the intercalations used among different nations, we see that some permit the hours to accumulate till they form a whole day, while others neglect the intercalation till the supplementary hours form a period equal to one of the great divisions of their year. The first mode of intercalation is that of the Julian year, the second is that of the ancient Persians, who added, every one hundred and twenty years, a whole month of thirty days to a year of twelve months, and so that the intercalary month ran through the whole year in 12 × 120 or fourteen hundred and forty years*. The Mexicans have evidently followed the system of the Persians; they retained the vague year, till the supplementary hours formed a half-lunation, and they intercalated consequently thirteen days in every *ligature*, or cycle of fifty-two years. Hence it followed, as we have already observed, that each ligature contained $\frac{18993}{13}$, or one thousand four hundred and sixty-one small periods of thirteen days. The Mexican year began at the commencement of the xiuhmolpilli, on the day which corresponds to the 9th of January of the Gregorian calendar. The fifth, ninth, and thirteenth years

* Ideler, Hist. Unters., s. 379.

of the cycle, the first day of the year was the 8th, the 7th, and the 6th of January; in every year of the sign *tochtli* the Mexicans lost a day; and by the effect of this retrogradation, the year *calli* of the fourth indiction began the 27th of December, and finished at the winter solstice, the 21st of December; not reckoning the five useless or complementary days. Hence it results, that the last of the nemontemi, called *cohuatl*, and considered as the most unlucky day, because it belonged to no period of thirteen days, fell, at the end of the cycle, on the 26th of December; and the thirteen intercalary days brought back the beginning of the year to the 9th of January. In order to render what we have just explained more clear, we shall here add the table of the last twenty-five days of the first year of the cycle.

GREGORIAN CALENDAR.		TONALPOHUALLI.		METZLAPOHUALLI. SERIES OF 13 NUMBERS, AND OF 20 SIGNS OF THE DAY.		SERIES OF 9 SIGNS OF THE NIGHT.
DECEMBER, 1091.	15	ATEMOZTLI OF THE YEAR 2 *ACATL*.	1	27th PERIOD OF 13 DAYS.	3 Cipactli.	Tepeyollotli.
	16		2		4 Ehecatl.	Quiahuitl.
	17		3		5 *Calli*.	*Tlatl*.
	18		4		6 Cuetzpalin.	Tecpatl.
	19		5		7 Cohuatl.	Xochitl.
	20		6		8 Miquiztli.	Cinteotl.
	21		7		9 Mazatl.	Miquiztli.
	22		8		10 *Tochtli*.	Atl.
	23		9		11 Atl.	Tlazolteotl.
	24		10		12 Itzcuintli.	Tepeyollotli.
	25		11		13 Ozomatli.	Quiahuitl.
	26		12	25th PERIOD OF 13 DAYS.	1 Malinalli.	*Tlatl*.
	27		13		2 *Acatl*.	Tecpatl.
	28		14		3 Ocelotl.	Xochitl.
	29		15		4 Quauhtli.	Cinteotl.
	30		16		5 Cozcaquauhtli.	Miquiztli.
	31		17		6 Ollin.	Atl.
JANUARY, 1092.	1		18		7 *Tecpatl*.	Tlazolteotl.
	2		19		8 Quiahuitl.	Tepeyollotli.
	3		20		9 Xochitl.	Quiahuitl.
	4	NEMONTEMI.	1		10 Cipactli.	.....
	5		2		11 Ehecatl.	.....
	6		3		12 *Calli*.	.....
	7		4		13 Cuetzpalin.	.....
	8		5		1 Cohuatl.	.....
	9	TITITL OF THE YEAR 3 *TECPATL*.	1	1st PERIOD OF 13 DAYS.	1 Cipactli.	*Tlatl*.
	10		2		2 Ehecatl.	Tecpatl.
	11		3		3 *Calli*.	Xochitl.
	12		4		4 Cuetzpalin.	Cinteotl.
	13		5		5 Cohuatl.	Miquiztli.
	14		6		6 Miquiztli.	Atl.
	15		7		7 Mazatl.	Tlazolteotl.

The intercalation of thirteen days was celebrated by a great secular festival, called xiuhmolpia, or toxiuhmolpilia (ligature of our years), and described by all the historians of the conquest*. The Mexicans believed, according to a very ancient prediction, that the end of the world would take place at the termination of a cycle of fifty-two years; that the Sun would no more appear on the horizon; and that mankind would be devoured by evil genii of hideous appearance, known under the name of *Tzitzimimes*. This belief was no doubt connected with the Tolteck tradition of the *four ages*, according to which the Earth had already undergone four great revolutions, three of which had taken place at the end of a cycle. The people passed in the deepest consternation the five complementary days, which preceded the xiuhmolpia: on the fifth day, the sacred fire was extinguished in the temples by order of the teoteuctli, or high priest; in the convents, the number of which was as considerable at Tenochtitlan, as it has been from the remotest periods in Thibet and Japan, the monks, or tlamacazquis, devoted themselves to prayer: at the approach of the night, no person dared light the fire in his house;

* Torquemada, de una Fiesta grandissima, lib. 10, c. 33—36; tom. 2, page 312 et 321. Acosta, lib. 6, c. 2, p. 259.

the vessels of clay were broken, garments torn, and whatever was most precious was destroyed, because every thing appeared useless at the tremendous moment of the last day. Amidst this frantic superstition, pregnant women became the objects of peculiar horror to the men; their faces were hidden with masks, made with paper of the agave; they were even imprisoned in the store houses of maize; from a persuasion, that, if the cataclysm took place, the women, transformed into tigers, would make common cause with the evil genii (tzitzimimes), to avenge themselves of the injustice of the men.

In the evening of the last day of the nemontemi, which is presided by the sign of the serpent, began the festival of the *new fire*. The priests took the dresses of their gods; and, followed by an immense crowd of people, went in solemn procession to the mountain of Huixachtecatl*, two leagues from Mexico, between Iztapallapan and Culhuacan. This lugubrious march was called the march of the gods, teonenemi; a denomination which reminded the Mexicans, that the gods had quitted their city, and that perhaps they would see them no more. When the procession had reached the summit of the porphyritic mountain of Huixachtecatl, it waited the moment when the Pleiades ascended

* Vixachtla, from Gomara, Conquista, fol. 133 (a).

the middle of the sky, to begin the horrible sacrifice of which we have spoken*, in the description of plate 15th, No. 8. The corpse of the victim remained stretched on the ground, and the instrument made use of to kindle the fire by rubbing (πορεια of the Greeks, *tletlaxoni* of the Mexicans) was placed on the wound, which the priest of Copulco, armed with a knife of obsidian, had made in the breast of the prisoner destined to be sacrificed. When the bits of wood (*la harina del palillo*), detached by the rapid friction of the cylinder, had taken fire, an enormous pile, previously prepared to receive the body of the unfortunate victim, was kindled. The flames of the pile were seen from a great part of the valley of Mexico, on account of the height of the mountain on which this sanguinary rite was performed; and the people filled the air with joyful exclamations. All those who were unable to follow the procession were stationed on the terraces of houses, or the tops of the teocallis, or the hills that arose in the middle of the lake; their eyes were fixed on the spot where the flame was to appear, a certain presage of the benevolence of the gods, and of the preservation of mankind during the course of a new cycle. Messengers posted at respective distances, holding branches of the wood of a very resinous pine,

* Page 225.

carried the new fire from village to village, to the distance of fifteen or twenty leagues; it was deposited in every temple, whence it was distributed to every private dwelling. When the Sun began to appear on the horizon, the acclamations redoubled. The procession went back from the mountain of Iztapalapan, to the city; and the people thought, that they beheld their gods return to their sanctuaries. The women were then released from prison; every one put on new dresses, and the thirteen intercalary days were employed in cleansing the temples, in whitening the walls, in renewing their household furniture, their plate, and whatever else was necessary for domestic use.

This secular festival, this apprehension of seeing the fifth sun extinguished at the epoch of the winter solstice, seems to present a new instance of analogy between the Mexicans and the inhabitants of Egypt. Achilles Tatius*, in his commentary on Aratus, has preserved the following account, which Scaliger thinks is borrowed from the Octaeterides of Eudoxus. "When the Egyptians saw the Sun descend from the Crab

* Achil. Tat., Isag. in Phænom., c. 23, (Petavius de Doctr. Temp., 1703, tom. 3, p. 85). Scalig., Adnot. ad Manil. Astron., lib. 1, v. 69, p. 85. See also the French translation of the Letters of Count Carli, tom. 1, page 398, note 1.

towards Capricorn, and the days gradually diminish, they were accustomed to sorrow from the apprehension, that the Sun was to abandon them entirely. This epocha coincided with the festival of Isis: but when the orb began to reappear, and the duration of the days grew longer, they robed themselves in white garments, and crowned themselves with flowers (λευχειμονήσαντες εστεφανηφόρησαν)." On reading this passage of Achilles Tatius, we think we peruse what Gomara and Torquemada relate respecting the festival of the Mexican jubilee. In the same manner*, in the work of Sextus Empiricus† against the astrologers, we find as it were the description of the symbolical figure‡, which we have engraved in Plate 15th, from the manuscript preserved at Veletri. In every nation on Earth superstitious ideas assume the same form at the rise and fall of civilization; and it is on account of this analogy, that it is difficult to distinguish what has been communicated from country to country, and what man has drawn from an interior source.

* Dupuis, Mém. explicatif du Zodiaque, 1806, page 145.

† Sext. Empir. contra Mathem., lib. 5, (ed. Stephan., tom. 3, p. 187). Firmicus, lib. 2, c. 27, (ed. Ald. Manut, 1503, fol. 105). Origen. contra Celsum, lib. 8, c. 55, (ed. Delarne, 1733, tom. 1, page 783.

‡ See above, page 206, Pl. 15.

P. Torquemada, speaking of the secular festival, marks the moment of the sacrifice apparently in a very exact manner, but which contains a real contradiction. "When the procession *," says he, "reached the foot of the mountain of "Huixachtecatl, the priests waited till mid-"night, which they knew by the position of the "Pleiades, which at this hour had attained the "mid-sky, *(estavan encumbradas en medio del "cielo)*: for the time of the jubilee or secular "festival was arrived, when these stars rose at "the beginning of the night; which for *the "horizon of Mexico* is generally in the month "of December." The expression, "when the "Pleiades had attained the mid-sky," means without doubt the passage of the stars across the meridian, or, what is nearly the same thing for the calendar of Mexico, their passage through the zenith. Now the last secular festival was celebrated in the sixth year of the reign of Montezuma; and at that epoch, the culmination of the Pleiades took place at midnight, if we take into account the precession of the equinoxes, not in the month of December, but on the 8th of November. On the 26th of December, this constellation rose 3^h 23′ before sunset, and its passage across the meridian was at 8^h 33′ in the

* Torquemada, Tom. 3, p. 313, b. et 321 a.

evening. These circumstances are naturally the same for every part of the Earth, where we may suppose the Mexican calendar to have been formed; and if we go back to the first sacrifices celebrated at Tlalixco in 1091, or to the migrations of the Toltecks in the sixth century of our era, we find, that, toward the winter solstice, from the effect of the precession of the equinoxes, the culmination of the Pleiades draws nearer sunset. It is probable, that the expression, "at the moment of midnight," and "mid-sky," ought not to be taken in the literal sense. Torquemada speaks generally in so confused a manner of the system of the chronology of the Mexicans, that it may be supposed he had misconceived all that the Indians told him respecting their astronomical phenomena. After having formally stated, that the cycle, and consequently the year, finished in the month of December, he admits, that the first day of the year is the 1st of February; and he adds, that at the winter solstice the Sun attains at Mexico the *most elevated* point of its course. Torquemada has collected with the most scrupulous exactness names, traditions, and isolated facts; but, utterly devoid of judgment, he contradicts himself whenever he endeavours to combine facts, or judge of their mutual relations. As the Mexicans were not acquainted with the use of clepsydras, which are of very

high antiquity * in Chaldea and China, they could not exactly mark the moment of midnight. Besides, the cosmical setting of the Pleiades was also considered, throughout the whole of Asia, as an indication of the beginning of winter †. We should look in vain for rigorous exactness in popular traditions, which perhaps took rise in much more northerly regions, where the cold is felt a month before the solstice.

What we have just said relative to the constellation of the Pleiades is also sufficient, to prove how far mistaken are some authors, who seem uncertain whether the year began toward the vernal equinox, or toward the winter solstice. The farther we remove from the 5th of November, the day of the achronical rising of the Pleiades, the less possible would it be, that at midnight, when this secular sacrifice was celebrated, the Mexicans should have seen this constellation near the zenith ‡. Nevertheless, Torquemada, Leon, and Betancourt, believed, that the year begun the 1st or 2d of February; Acosta and Clavigero, the 26th of the same month; Valades and Alva Ixtlilxochitl, the 1st and 20th of March; Gemelli and Veytia, the 10th of

* Sext. Empir. pag. Stephan. 113. Lettre du pere Du Cre*z*, in Souciet, Observat., Tom. 1, p. 245.

† Bailly, Astr. mod., p. 477.

‡ Gama, § 35, p. 52, note.

April. In the sixteenth century, the culmination of the Pleiades took place on the day of the vernal equinox 3h. 8′ *before the setting* of the Sun. It is true, that, according to an ancient tradition *, the disappearance of this constellation at sunrise denoted formerly the day of the autumnal equinox, which supposes an observation made three thousand years before our era; but we cannot admit, that the Mexicans had received their chronology from a people, who began their year at the entrance of autumn. The concordance of dates, several astronomical phenomena, the evidence of the Spanish authors who accumulated materials without knowing the true system of the calendar, all are in favor of the system of Gama. I shall content myself with citing a single proof. The Indian historiographer Christoval del Castillo, in a manuscript work †, written in the Mexican language, and preserved at Mexico, asserts, that the five complementary days were added to the end of the month Atemoztli; which corresponds, according to the unanimous testimony of the Indian and Spanish authors, to our month of December. Torquemada says besides, that the third festival of the god of water was celebrated at the winter

* Plin. Hist. Nat., Lib. 18, c. 25, (ed. Harduin, 1741, Tom. 2, p. 129.

† MSS., cap. 71.

solstice,* which took place towards the end of Atemoztli; and that the cycle finished in the month of December. All these circumstances agree in placing the intercalary days a short time after the winter solstice. The fear of seeing the star of day extinguished or disappear, the ideas of sorrow and of joy expressed at the secular festival, refer rather to the period of the shortening of the days, than to that of the equinox. It is true, it was at the entrance of spring, that at Rome the pontiff took the new fire from the altar of Vesta; and that the Persians celebrated the great festivals of the Neurouz; but the motives* of these festivals were different from those, that guided the Mexicans and the Egyptians in the solstitial festivals, and those in honor of Isis.

I have explained the system of the intercalation, such as it is seen in the Mexican manuscripts, such as it has been adopted by Siguenza, Clavigero, Carli, and long before them by Boulanger and Freret. According to this system, the length of the year is supposed to be 365·25 days; whence it results, that, from the reform of the calendar in 1091, to the arrival of the Spaniards, the Mexicans must have found themselves in an error of more than three days. Now the researches which Gama made on the

* Dupuis, Origine des Cultes, Tom. 1, p. 156; Tom. 2, P. 2, p. 96.

eclipses of the Sun on the 23d of February, 1477, and the 7th of June, 1481, which are indicated in the hieroglyphical annals; on several memorable periods of the conquest; and on the days, when, according to the Mexican records, the Sun passes the zenith of Tenochtitlan; seem to prove, that this error of three days did not take place; and that at the beginning of the sixteenth century, as we have before observed, the dates of the Azteck calendar were more accordant with the days of the solstices and equinoxes, than those of the Spanish calendar.

Without knowing the exact length of the year, the Mexicans would have been enabled from time to time to rectify their calendar, as they learned from gnomonic observations, that, in the first year of the cycle, the equinoxes of spring and autumn were some days distant from 7 malinalli, and from 9 cozcaquauhtli. The Peruvians of Cuzco, whose year was lunar, regulated their intercalation, not by the shadow of gnomons, which they however very assiduously measured, but by marks placed in the horizon, to denote where the Sun rose and set on the days of the solstices and equinoxes. A periodical and exact intercalation, such as that which has been known by the Persians since the eleventh century, is no doubt preferable to those sudden changes, which are denoted by the title of *reforms* of the calendar; but a nation, which for

ages should employ a very imperfect mode of intercalation, might nevertheless maintain harmony between its calendar, and that of the most civilized people, if, led by direct observation of the heavenly bodies, it changed at times the beginning of its year. The Mexican history, in its annals, offers no trace of such sudden changes, or extraordinary intercalations. Since the celebrated epoch of the sacrifice of Tlalixco, the calendar had undergone no reform, the intercalation was uniformly made at the end of each cycle; and to explain how four centuries had not been sufficient to produce a perceptible error in the chronology, Mr. Gama admits, that the Mexicans intercalated only twenty-five days every cycle of a hundred and four years, cehuehuetiliztli, or twelve days and a half at the end of each cycle of fifty-two years, which fixes the duration of the year to 365·24 days. He thinks himself enabled to conclude from the statement even of the historians of the sixteenth century, that the secular festival was celebrated day and night alternately; and that, if the years of a cycle began all at midnight, those of another began all at noon. Unable to examine the works written in the Mexican language, I cannot decide on the accuracy of Mr. Gama's opinions. The reasons which he alleges in his dissertation on the monuments discovered in 1790, appear to me less conclusive, since I have been enabled to

examine more thoroughly the Mexican calendar. When his heirs shall have obtained the means of publishing his treatise on the Tolteck and Azteck chronology, it will be more easy to judge of the real number of the intercalary days. Gama's astronomical labors, the exactness of which we have had an opportunity of verifying, ought to inspire great confidence; and it is probable, that a scientific person, who has had the patience to calculate for the parallel of the ancient Tenochtitlan, according to the tables of Mayer, a great number of eclipses of the Sun, connected with historical epochas, would not have lightly hazarded a new hypothesis, had he not been led to it by a careful comparison of dates, and by the study of hieroglyphical paintings.

" The intercalation of twenty-five days in a hundred and four years," says Mr. La Place *, " supposes a more exact duration of the tropical years than that of Hipparchus, and, what is very remarkable, almost equal to the year of the astronomers of Almamon. When we consider the difficulty of attaining so exact a determination, we are led to believe, that it is not the work of the Mexicans, and that it has reached them from the Old Continent; but from what people, and by what means, was it received? Why, if it was transmitted to them from the north of Asia, is

* Expo. du Système du Monde, 3d ed., Tom. 2, p. 318.

their division of time so different from those, which have been used in that part of the world?" In our present state of knowledge, we must not flatter ourselves, that we can solve these questions; but even not admitting the intercalation of twelve days and a half in a cycle, and not granting to the Mexicans the knowledge of the ancient Persian year of 365·25 days, we shall find in the hieroglyphics of the days, and in the employment of the periodical series, irrefragable testimony of an ancient communication with eastern Asia.

Though the Mexican cycle began by the year of the rabbit, *tochtli*, as the Tartar cycle begins by the year of the rat, *singueri*, the intercalation took place only in the year *ome acatl*. This very circumstance induced the Mexicans, to denote in their paintings a *xiuhmolpilli*, or cycle of fifty-two years, by a bundle of canes. The Mexicans had migrated from Aztlan in the year 1064, or 1 *tecpatl*; their migrations lasted twenty-three years, till 1087, or 2 *acatl*, when they arrived at Tlalixco. Now, though the reform of the calendar took place in 1090, or the year 1 *tochtli*, the festival of the new fire was nevertheless celebrated only in the following year 2 *acatl*; because, says the Indian historian, Tezozomoc, "the tutelary god of the nation, Huitzilopochtli, had made his first appearance the day 1 tecpatl of the year 2 *acatl*."

Some writers have suspected, that the Mexicans, before the reform of the calendar of Tlalixco, had intercalated a day every four years. A festival of the god of fire, (Xiuhteuctli), celebrated with more solemnity in the year which bore the symbol *tochtli*, seems to have given rise to this opinion. Count Carli, whose American Letters exhibit a singular mixture of just observations, of ingenious ideas, of mere sportive notions, and of things incompatible with the principles of sound philosophy, and the true system of the motions of the heavenly bodies, imagines, that he has discovered, in the festivals of nine days, celebrated every four years, the remains of a lunar intercalation. He supposes, that the Mexican priests computed in a year twelve lunations of twenty-nine days, eight hours; and that to bring back, every four years; these years of three hundred and fifty-two days to real lunar years, they added nine days. This supposition is almost as vague as that of the same writer, when he attributes to the celestial bodies the mistake of the ancient calendars, in admitting that, some thousands of years before our era; the Earth finished its revolution round the Sun in three hundred and sixty days *, and that a lunar month was only twenty-seven days and a half.

* Lettres Americaines, Tom. 2, p. 153, 161, 137, 333, and 371.

As a periodical series of four terms was employed to distinguish the years contained in a cycle, the Mexicans were very naturally led to quadrennial festivals. Such was the solemn fast of one hundred and sixty days, celebrated at the spring equinox, in the petty republics of Tlascalla, Cholula, and Huetxocingo; and the horrible sacrifice, which took place every four years at Quauhlitlan, in the month of itzcalli, when the penitents scarified their bodies, letting the blood run along reeds thrust into their wounds *, and hanging up these reeds in the temple, as public marks of their devotion. These festivals, which remind us of the acts of penitence at Thibet and in the Indies, were repeated each time that the same sign presided over the year.

On opening, at Rome, the Codex Borgianus of Veletri, I there found the curious passage †, from which the Jesuit Fabrega concluded, that the Mexicans had knowledge of the real duration of the tropical year. Twenty cycles of fifty-two years, or one thousand and forty years, are there indicated in four pages: at the end of this great period, we see the sign rabbit, *tochtli*, immediately precede, among the hieroglyphics of the days, the bird, *cozquauhtli*; so that seven

* Gomara, p. 131. Torquemada, Tom. 2, p. 307. Gemelli, Tom. 6, p. 75.

† Cod. Borg. fol. 48—63. Fabrega, MSS. fol. k, p. 7.

days are suppressed, those of *water*, the *dog*, the *ape*, *grass (malinalli)*, the *cane*, the *tiger*, and the *eagle*. P. Fabrega supposes, in his manuscript commentary, that this omission refers to a periodical reform of the Julian intercalation, because a subtraction of seven days, at the end of a cycle of one thousand and forty years, reduces, by an ingenious method, a year of 365·25 days to a year of 365·243 days, which is only 1′ 26″, or 0·001 of a day, greater than the real mean year, as it is laid down in the tables of Mr. Delambre. After the examination of a great number of hieroglyphic paintings of the Mexicans, and having seen the extreme care with which they are executed in the minutest details, we cannot admit, that the omission of seven terms in a periodical series is owing to mere chance. Fabrega's observation without doubt deserves notice here; not that it is probable, that a nation should in reality employ a reform of the calendar only after long periods of a thousand and forty years; but because the manuscript of Veletri seems to prove, that its author was acquainted with the real duration of the years. If at Mexico, on the arrival of the Spaniards, an intercalation of twenty-five days in one hundred and four years existed, it is to be supposed, that this more perfect intercalation was preceded by an intercalation of thirteen days in fifty-two years. Now the remembrance of

this ancient method would have been preserved; and it is possible, that the Mexican priest, who composed the ritual in the Borgian Museum, meant to indicate in his book a contrivance of calculation adapted to rectify the ancient calendar, by retrenching seven days from a great period of twenty cycles. We shall be able to judge of the propriety of this opinion, only when a greater number of Mexican paintings shall have been consulted in Europe and in America; for I cannot too often repeat, that all that we have hitherto learnt respecting the ancient state of the natives of the New Continent is nothing, in comparison with the light which will be one day thrown on this subject, if we succeed in bringing together the materials now scattered over both worlds, that have survived the ages of ignorance and barbarism.

The valuable monument represented in plate 23d, which had been already engraved at Mexico twenty years ago, confirms a part of the ideas we have just unfolded respecting the Mexican calendar. This immense stone was found in the month of December, 1790, in the foundations of the great temple of Mexitli, in the great square of Mexico, nearly seventy metres to the west of the second gate of the Viceroy's palace, and thirty metres north of the flower market, called *Portal de las flores*, at the small depth of five decimetres. It was so placed, that the sculp-

tured part could be seen only by putting it in a vertical position. When Cortez destroyed the temples, he broke the idols, and every thing that belonged to the ancient rites. Those masses of stone, which were too large to be destroyed, were buried, in order to conceal them from the eyes of a vanquished people. Though the circle, which contains the hieroglyphics of the days, is only three metres four decimetres in diameter, we found, that the whole stone formed a rectangled parallelopipedon of four metres length, as many metres broad, and one metre thick.

The nature of this stone is not calcareous, as Mr. Gama asserts; it is a blackish gray trappean porphyry, with basis of basaltic *wakke*. On carefully examining some detached fragments, I perceived hornblende, several very slender crystals of vitreous feldspar, and, what is very remarkable, sprinklings of mica. This rock, cracked and full of small cavities, is destitute of quartz, like almost all rocks of trappean formation. As its actual weight is more than twenty-four tuns, and no mountain within eight or ten leagues of the city could furnish a porphyry of this grain and color, we may easily imagine the difficulties, which the Mexicans must have found in transporting so enormous a mass to the foot of the Teocalli. The sculpture in relievo is as well polished as any other to be found in Mexican works; the concentric circles, the

numerous divisions and subdivisions, are traced with mathematical precision; the more minutely the detail of this sculpture is examined, the greater taste we find in the repetition of the same forms, that attention to order and feeling of symmetry, which among half civilized nations is a substitute for the feeling of the beautiful.

In the centre of the stone is sculptured the celebrated sign *nahui ollin Tonatiuh* (the Sun in his four motions), of which we have already spoken. The Sun is surrounded by eight triangular radii; which are also found in the ritual calendar *tonalamatl*, in historical paintings, and wherever there is a representation of the Sun, *Tonatiuh* *. The number eight alludes to the division of the day and the night into eight parts †. The god Tonatiuh is figured opening his large mouth, armed with teeth; this yawning mouth, and protruded tongue, remind us of the figure of a divinity of Hindostan, the image of *Kala, Time*. According to a passage of the Bhagvat-Gheeta, Cala "swallows the worlds, opening a fiery mouth, exhibiting a row of dreadful teeth, and protruding an enormous tongue ‡." Tonatiuh, placed among the signs of the days, measuring

* Pl. 15, n. 4, (Cod. Borg. Veletr., fol. 49).

† See p. 282.

‡ Wilkins's Translation. See also The Hindu Pantheon, art. Kâla.

the year by the *four movements* of the solstices and the equinoxes, is in fact the real symbol of time; it is *Krishna* assuming the form of Kâla, it is Chronos devouring his children, whom we imagine we find under the name of Moloch among the Phœnicians.

The inner circle contains the twenty signs of the days; recollecting that *cipactli* is the first, and *xoçhitl* the last of these asterisms, we here, as elsewhere, perceive, that the Mexicans arranged the hieroglyphics from right to left. The heads of the animals are placed in an opposite direction, no doubt because the animal, which turns his back to another, is supposed to precede it. Mr. Zoega observed this peculiarity among the Egyptians*. The death's head, *miquiztli*, placed near the serpent, and accompanying it as a sign of the night in the third periodical series, is an exception to the general rule; this alone is directed toward the last sign, while the animals have their faces turned toward the first. This arrangement is not the same in the manuscripts at Veletri, Rome, and Vienna.

It is probable, that the sculptured stone, which Mr. Gama has endeavoured to explain, was anciently placed in the enclosure of the teocalli, in a *sacellum* dedicated to the sign *ollin*

* Zoega, de Obel., p. 464; where, by an error of the press, the words *dextrorsum* and *sinistrorsum* are confounded with each other.

Tonatiuh. We know by a fragment of Hernandez, preserved by the Jesuit Nieremberg in the eighth book of his Natural History, that the great teocalli contained within its walls six times thirteen or seventy-eight chapels, several of which were dedicated to the Sun, the Moon, the planet Venus, called *Ilcuicatitlan* or *Tlazolteotl*, and to the signs of the zodiac*. The Moon, considered by all nations as the planet that attracts humidity, had a small temple *(teccizcalli)* built in shell work. The great festivals of the Sun *(Tonatiuh)* were celebrated at the winter solstice, and in the sixteenth period of thirteen days, over which presided both the sign nahui ollin Tonatiuh, and the milky way, known under the name of *Citlalinycue*, or *Citlalcueye*. During one of these festivals of the Sun, the kings were wont to withdraw into an edifice, built in the midst of the enclosure of the teocalli, and called *Hueyquauhxicalco.* They passed four days in fasting and penitence; a bloody sacrifice was afterward offered in honor of the eclipses *(Netonatiuhqualo*, the *unfortunate Sun devoured).* In this sacrifice one of two masked victims represented the Sun, Tonatiuh, the

* Eusebii Nierembergii Hist. Nat., lib. 8, cap. 22, (Antwerpiæ, 1635, page 142—156). Templi partes, 3, 8, 9, 20, 25.

other, the Moon, Meztli, as emblems to show, that the Moon is the real cause of the eclipse of the Sun.

Beside the asterisms of the Mexican zodiac, and the figures of the sign *nahui ollin*, the stone gives also the dates of ten great festivals, which were celebrated from the spring to the autumnal equinox. As several of these festivals were correspondent with celestial phenomena, as the Mexican year is vague during the space of a cycle, and as the intercalation takes place only every fifty-two years, the same dates do not denote four years successively the same days. The winter solstice, which, the first year of the cycle, took place on the day 10 tochtli, retrograded two signs eight years later, and fell on the day 8 miquiztli. Hence it follows, that, in order to indicate the dates by the signs of the days, we must add the year of the cycle with which these dates correspond. In fact the sign 13 canes, or *matlactly omey acatl*, placed above the figure of the Sun, toward the upper edge of the stone, shows, that this monument contains the *fasti* of the twenty-sixth year of the cycle, from the month of March to the month of September.

In order to give a clearer view of the signs, which indicate the festivals of the Mexican religion, I must again observe, that the rounds

placed near the hieroglyphics of the days are terms of the first of the three periodical series, of which we have already explained the use. Reckoning from right to left, and beginning at the right of the triangle resting on the forehead of the god, *Ollin* Tonatiuh, with the point toward *cipactli*, we find the eight following hieroglyphics: 4 *tiger*; 1 *silex*; *tletl*, fire, without marking the number; 4 *wind*; 4 *rain*; 1 *ram*; 2 *ape*; and 4 *water*. We now come to the explanation of the Mexican festivals, according to the calendar of Mr. Gama, and the order of the festivals indicated in the works of the historians of the sixteenth century.

In the year 13 *acatl*, which is the last year of the second indiction of the cycle, the beginning of the year retrograded six days and a half, because the intercalation had not taken place for twenty-six years. The first day of the month *tititl*, which bears the sign 1 *cipactli tletl*, consequently corresponds not to the 9th but the 3d of January; and the sign, which presides over the seventh period of thirteen days, 1 *quiahuitl*, or 1 *rain*, coincides with the 22d of March, or with the vernal equinox. It is at this period, that the festivals of *Tlaloc*, or the god of water, were celebrated; which indeed had already begun ten days before the equinox, on the day 4 atl, or 4 water; without doubt, because on the 12th of March, or the 3d of the month *Tlacaxi-*

pehualiztli, the hieroglyphic of water, *atl*, was the sign * both of the day and of the night. Three days after the vernal equinox, the day 4 *ehecatl*, or 4 wind, began a solemn fast of forty days, in honour of the Sun. This fast finished on the 30th of April, which corresponds to 1 *tecpatl*, or 1 flint. As the sign of this day is accompanied by the Lord of the Night *tletl*, fire, we find the hieroglyphic *tletl*, placed near 1 *tecpatl*, on the left of the triangle, the point of which is directed toward the beginning of the zodiac. At the right of the sign 1 *tecpatl* is 4 *ocelotl*, or 4 tiger, this day is remarkable from the passage of the Sun through the zenith of the city of Mexico. The whole of the small period of thirteen days, in which this passage takes place, and which is the eleventh of the ritual year, was dedicated to the Sun. The sign 2 *ozomatli*, or 2 ape, corresponds to the epocha of the summer solstice, it is placed immediately near 1 *quiahuitl*, or 1 rain, the day of the equinox.

We might be puzzled to explain 4 *quiahuitl*, or 4 *rain*. In the first year of the cycle, this day corresponded exactly to the second passage of the Sun through the zenith of the city of Mexico; but in the year 13 *acatl*, the fasti of which are found in this monument, the day 4

* Nahui atl, atl, atl; see above, page 316.

rain preceded this passage six days. As the whole period of thirteen days, in which the Sun reaches the zenith, is dedicated to the sign *ollin Tonatiuh*, and the milky way, *citlalcueye;* and as the day 4 rain constantly belongs to this same period; it seems probable, that the Mexicans indicated this last day in preference, in order that the figure of the Sun should be surrounded by four signs, which had all the same number four; and particularly to form an allusion to the four destructions of the Sun, which tradition places in the days 4 tiger, 4 wind, 4 water, and 4 rain. The five small rounds, which are found on the left of the day 2 ape, immediately above the sign *malinalli*, seem to allude to the festival of the god *Macuil-Malinalli*, who had particular altars; this festival was celebrated about the 12th of September, called *Macuilli Malinalli*. The point of the triangle, which separates the sign of the day, 1 silex, from the sign of the night, *tletl*, or fire, is directed toward the first of the twenty asterisms of the signs of the zodiac, because, in the year 13 canes, the day 1 *cipactli* corresponds to the day of the autumnal equinox: about this time was celebrated a festival of ten days, the most solemn of which was the day 10 *Ollin*, or 10 Sun, which corresponds to our 16th of September. It is believed at Mexico, that the two compartments placed under the tongue

of the god Ollin Tonatiuh present twice the number five; but this explanation appears to me as doubtful, as that which has been attempted to be given of the forty compartments surrounding the zodiac, and of the numbers 6, 10, and 18, which are repeated toward the edge of the stone. We shall not examine whether the holes made in this enormous stone were made, as Mr. Gama thought, to place wires to serve as gnomons. What is more certain, and highly important to Mexican chronology, is, that this monument proves, in opposition to the opinion of Gemelli and Boturini, that the first day, whatever be the sign of the year, is constantly presided by *cipactli*, a sign which corresponds to the Capricorn of the Greek sphere. We may suppose, that near this stone another was placed, which contained the fasti from the autumnal equinox to that of the spring.

We have now collected under the same point of view all that is hitherto known of the division of time among the Mexican nations, carefully distinguishing what is certain from what is merely probable. We see from what has been explained respecting the form of the year, how imaginary are those hypotheses, by which sometimes the lunar years, sometimes years of two hundred and eighty-six days divided into twenty-two months, have been attributed to the Tol-

tecks and the Aztecks*. The knowledge of the system of the calendar followed by the most northerly nations of America and Asia would be highly interesting. Among the inhabitants of Nootka, we still find the Mexican months of twenty days; but their year has only fourteen months, to which they add, by very complex methods, a great number of intercalary days†. When a nation does not regulate the subdivisions of the year after the same lunations, the number of months becomes very arbitrary, and its choice seems to depend only on a particular predilection for certain numbers. The Mexican nations preferred the double decads, because they had simple signs only for the units, for twenty, and for the powers of twenty.

The use of periodical series, and the hieroglyphics of the days, have exhibited striking analogies between the nations of Asia and those of America. Some of these examples have not escaped the penetration of Mr. Dupuis‡, though he has confounded the signs of the months with those of the days, and had but a very imperfect knowledge of the Mexican chronology. It would be contrary to the end we have proposed

* Waddilove, in Robertson's Hist. of America, vol. 3, p. 404, note 35.

† Don Joze Mozinno, Viage a Noutka, MS. (See my Essai Politique, vol. i. p. 335).

‡ Mémoire explicatif sur le Zodiaque, p. 99.

to ourselves in this work, to dwell on, theories respecting the ancient civilization of the inhabitants of the north, and of the centre of Asia. Thibet and Mexico offer analogies sufficiently remarkable in their ecclesiastical hierarchy, in the number of religious assemblies, in the severe austerity of their penitentiary rites, and in the order of their processions. It is impossible not to be struck with this resemblance, in reading with attention the recital, which Cortez made the Emperor Charles V, of his solemn entrance into Cholula, which he calls the holy city of the Mexicans.

A people who regulated its festivals according to the motion of the stars, and who engraved its *fasti* on a public monument, had no doubt reached a degree of civilization superior to that which has been allowed by Pauw, Raynal, and even Robertson, the most judicious of the historians of America. These writers consider every state of society as barbarous, that did not bear the type of civilization, which they, according to their systematic ideas, had formed. We cannot admit these abrupt distinctions into barbarous and civilized nations. After having examined in this work with scrupulous impartiality whatever we ourselves have been able to discover respecting the ancient state of the nations of the New Continent, we have endeavoured to combine the features by which they are immediately

characterized, and those by which they seem to be connected with different groups of Asiatics. The state of nations and of individuals is the same: as, in the latter, the whole faculties of the mind unfold themselves but gradually, so, in the former, the progress of civilization does not manifest itself at once in the melioration of public and private manners, in a taste for the arts, and in the form of general institutions. Before we class nations, we should study them according to their specific characters, since external circumstances may give an infinite variety to the shades of civilization, which distinguish tribes of a different race; especially when, fixed in regions far remote from each other, they have long lived under the influence of governments and religious rites hostile to the progress of the mind, and to the preservation of individual liberty.

CORRESPONDENCE

OF

ENGLISH WEIGHTS AND MEASURES

WITH THOSE USED IN FRANCE.

New French Weights and Measures.

I.—MEASURES OF LENGTH.

The Metre being at 36° and the Foot at 62°.

		English Inches.	Mil.	Fur.	Yds.	Feet.	In.
Millimetre	=	·03937					
Centimetre	=	·39371					
Decimetre	=	3·93710					
Metre	=	39·37100					
Decametre	=	393·71000	= 0	0	10	2	9·7
Hecatometre	=	3937·10000	= 0	0	109	1	1
Kilometre	=	39371·00000	= 0	4	213	1	10·2
Myriometre	=	393710·00000	= 6	1	156	0	6

II.—MEASURES OF CAPACITY.

		Cubic Inches.	Tons.	Hogs.	Wine G.	Pints.
Millilitre	=	·06103				
Centilitre	=	·61028				
Decilitre	=	6·10280				
Litre	=	61·02800	= 0	0	0	2·1133
Decalitre	=	610·28000	= 0	0	2	5·1352
Hecatolitre	=	6102·80000	= 0	0	26·419	
Kilolitre	=	61028·00000	= 1	0	12·19	
Myriolitre	=	610280·00000	= 10	1	58·9	

III.—WEIGHTS.

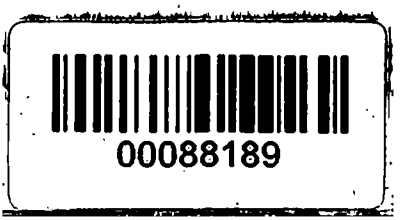
		English Grains.		AVOIRDUPOIS. Pound.	Oun.	Dram.
Milligramme	=	·0154				
Centigramme	=	·1544				
Decigramme	=	1·5444				
Gramme	=	15·4440				
Decagramme	=	154·4402	=	0	·0	5·65
Hecatogramme	=	1544·4023	=	0	3	8·5
Kilogramme	=	15444·0234	=	2	3	5
Myriogramme	=	154440·2344	=	22	1	2

IV.—ANCIENT PARIS MEASURES.

The French toise	=	6·3945	English feet.
The Paris foot of 12 in.	=	12·7977	English inches.
The inch	=	1·0664	
The line, or 1-12th of an in.	=	·0888	
The 12th of a line.....	=	·0074	

END OF VOL. XIII.

J. G. BARNARD, SKINNER STREET, LONDON.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